



- Introduction
- Our Project
- Challenges
- Solutions
- Our successes
- What next

ANDY MORRISON

- Managing Director of Andisa IT Consultants Ltd – UK – 15 years
- Never been separated from a PC since 1983!
- MTCNA, MTCWE, MTCRE, Prince II project management, 3CX Phone Engineer, Degree in Electronics and Comms.
- President of Rotary Club in Harrogate





- Break Fix
- IT Support
- Cloud Server Hosting & Backups
- Hosted Exchange email / Office 365
- VoIP Telephone Solutions
- Full network Management
- Specialised Mikrotik networking practise including long range wireless, VLAN and routing



OUR PROJECT

- Rotary project Based in Panchamol Valley, Syangia. Funded partly through business partnership.
- 7 schools, soon to be 20
- Community Internet
- 200sqkm Wifi Network based on 30 Tiks
- Expanding by a further 45 Tiks
- We provide IT and internet access to high schools and then work to improve literacy teaching



Changing Children's Lives

NEPAL

Dhaulagiri ▲

CHINA

INDIA

- Around 4 hours drive from Pokhara
- Estimated population 25,000
- > 30% population below WHO defined poverty line
- Most are subsistence farmers

CHALLENGES OF A NETWORK

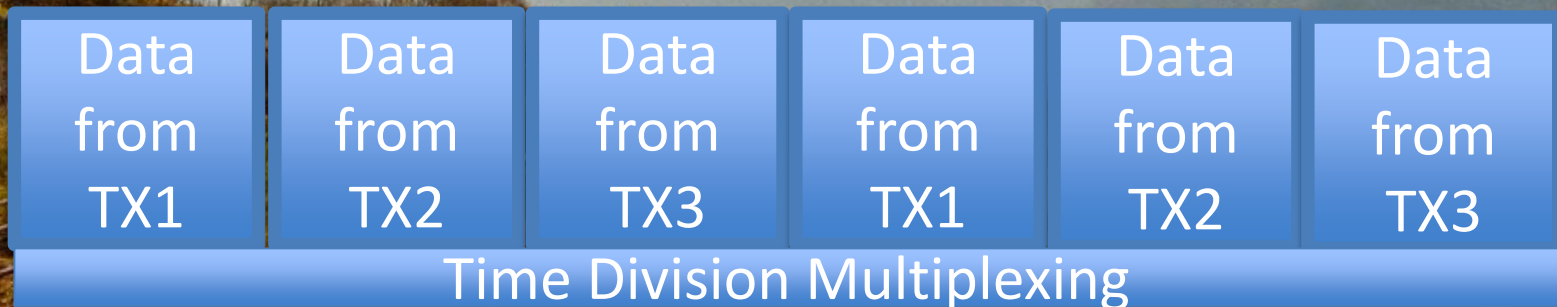
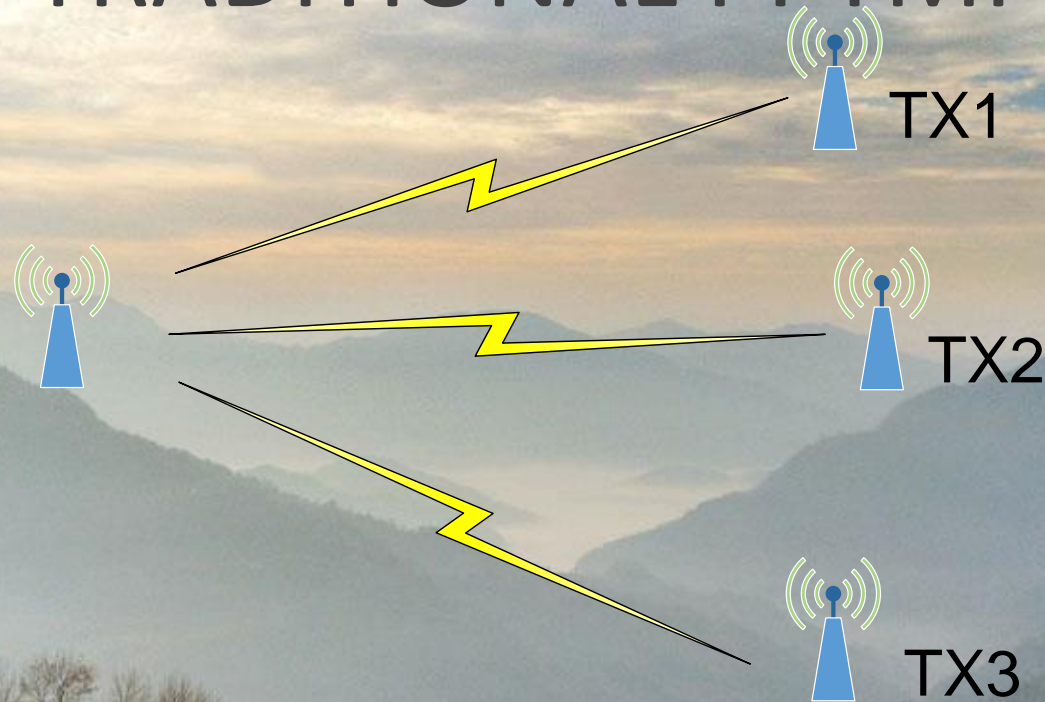


CONNECTIVITY

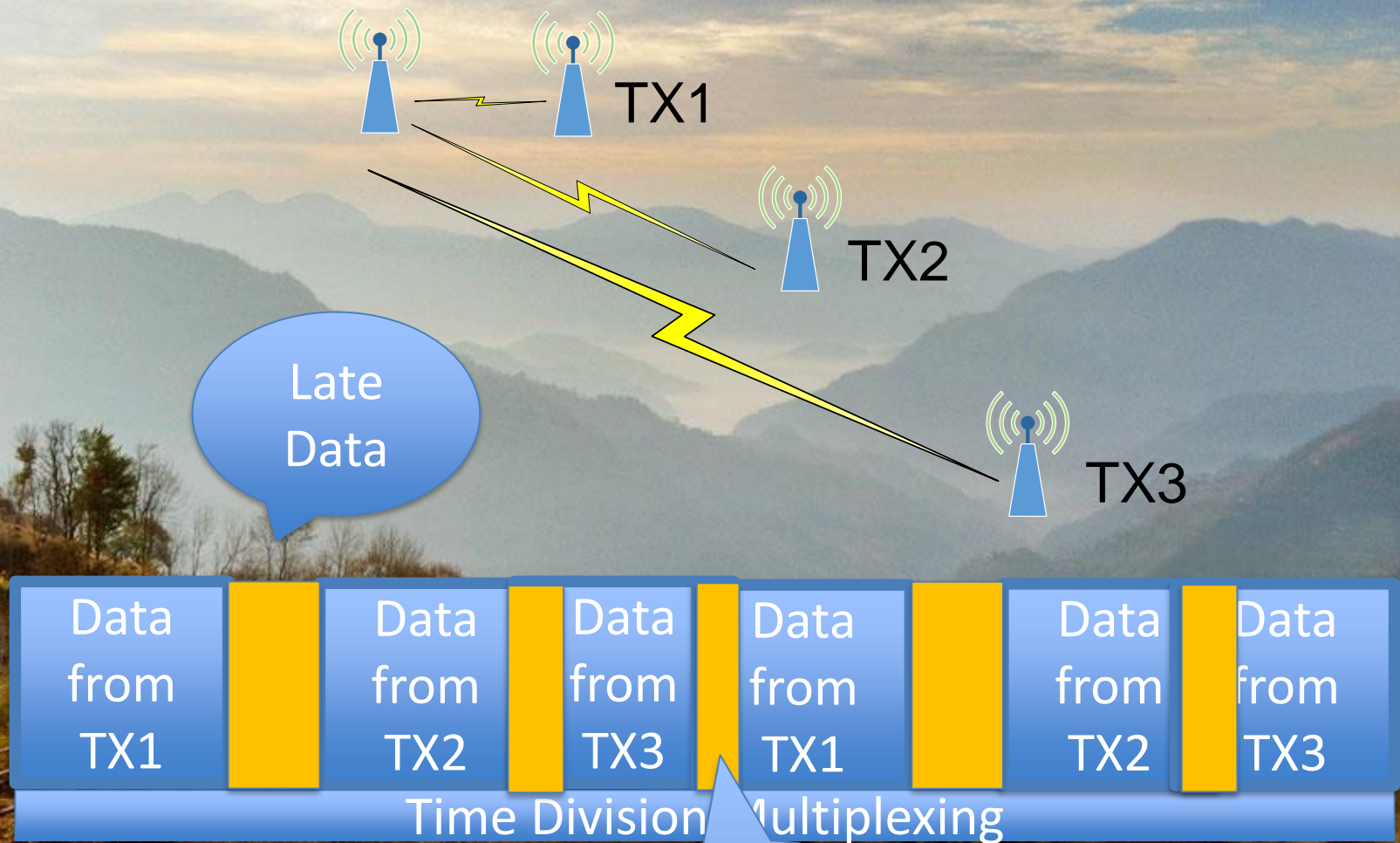
- Point to point links to deliver internet



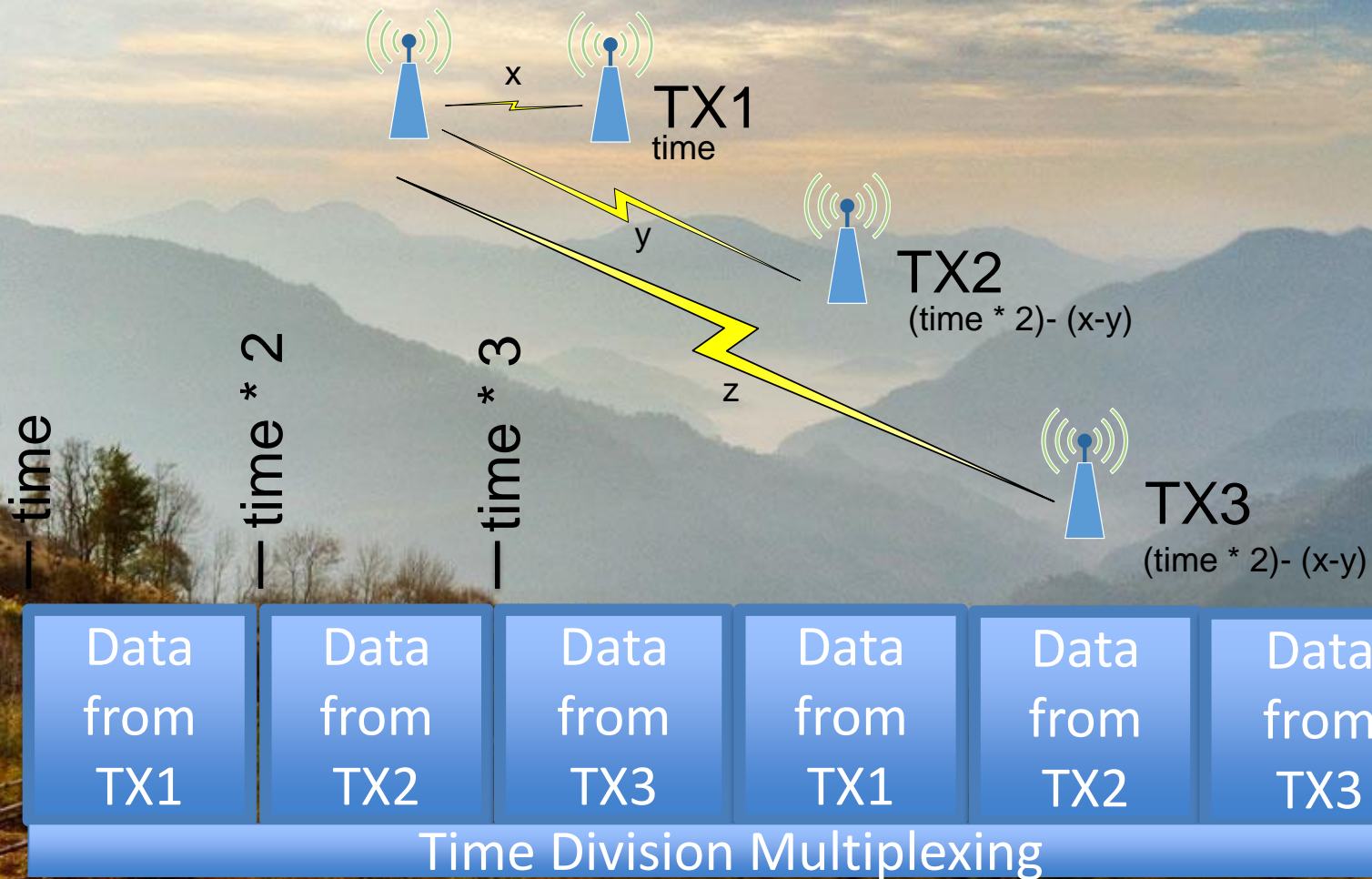
TRADITIONAL PPTMP



THE PROBLEM - DISTANCES



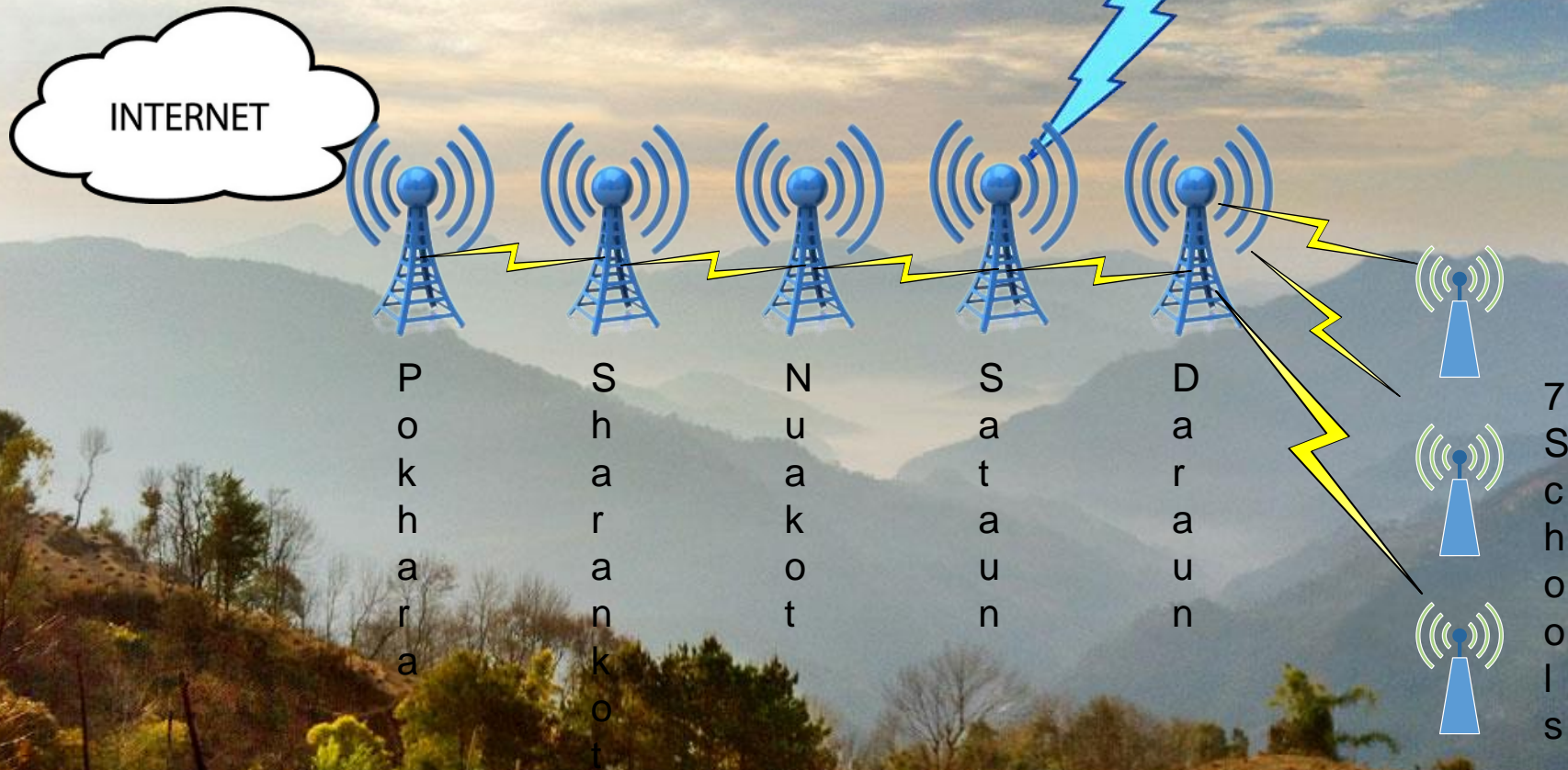
NV2 - THE SOLUTION



CONNECTIVITY FIXED

- Reliable speed even with differing distances
- Reduced cost
- Happy Customers

GEOGRAPHY & WEATHER

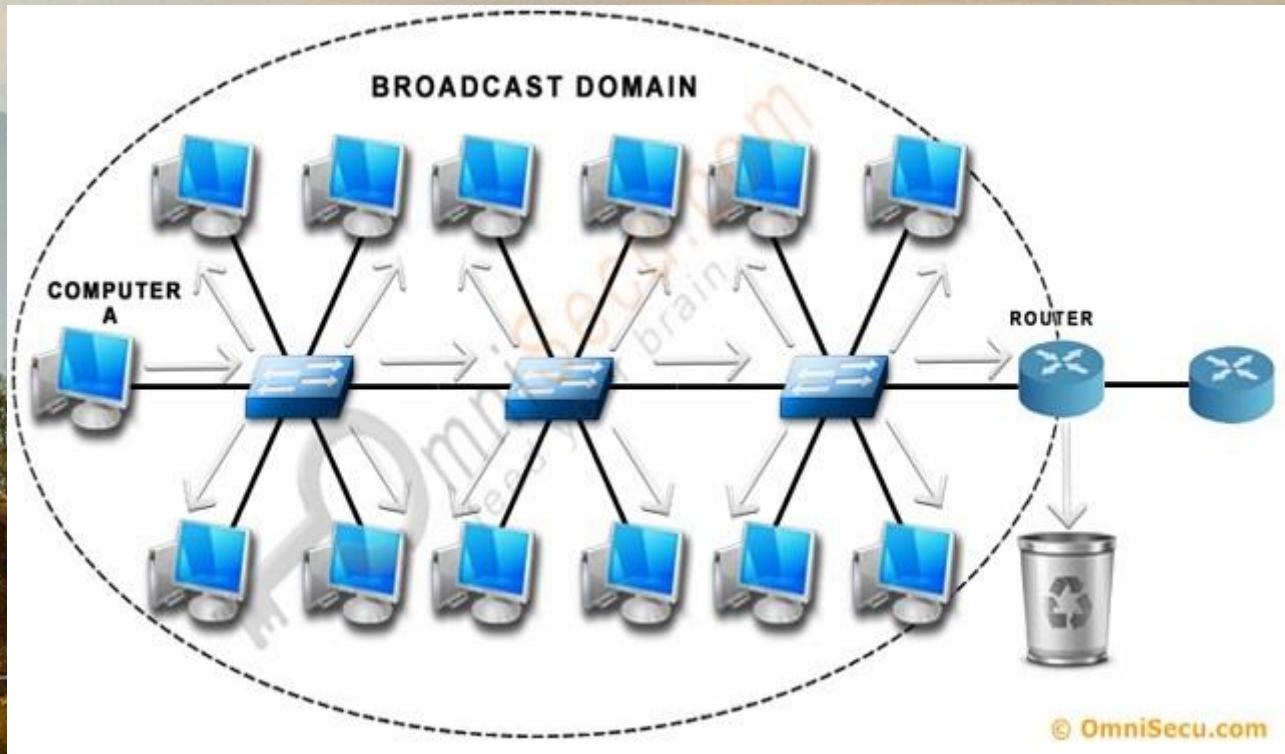


TRIANGULATION – THE SOLUTION

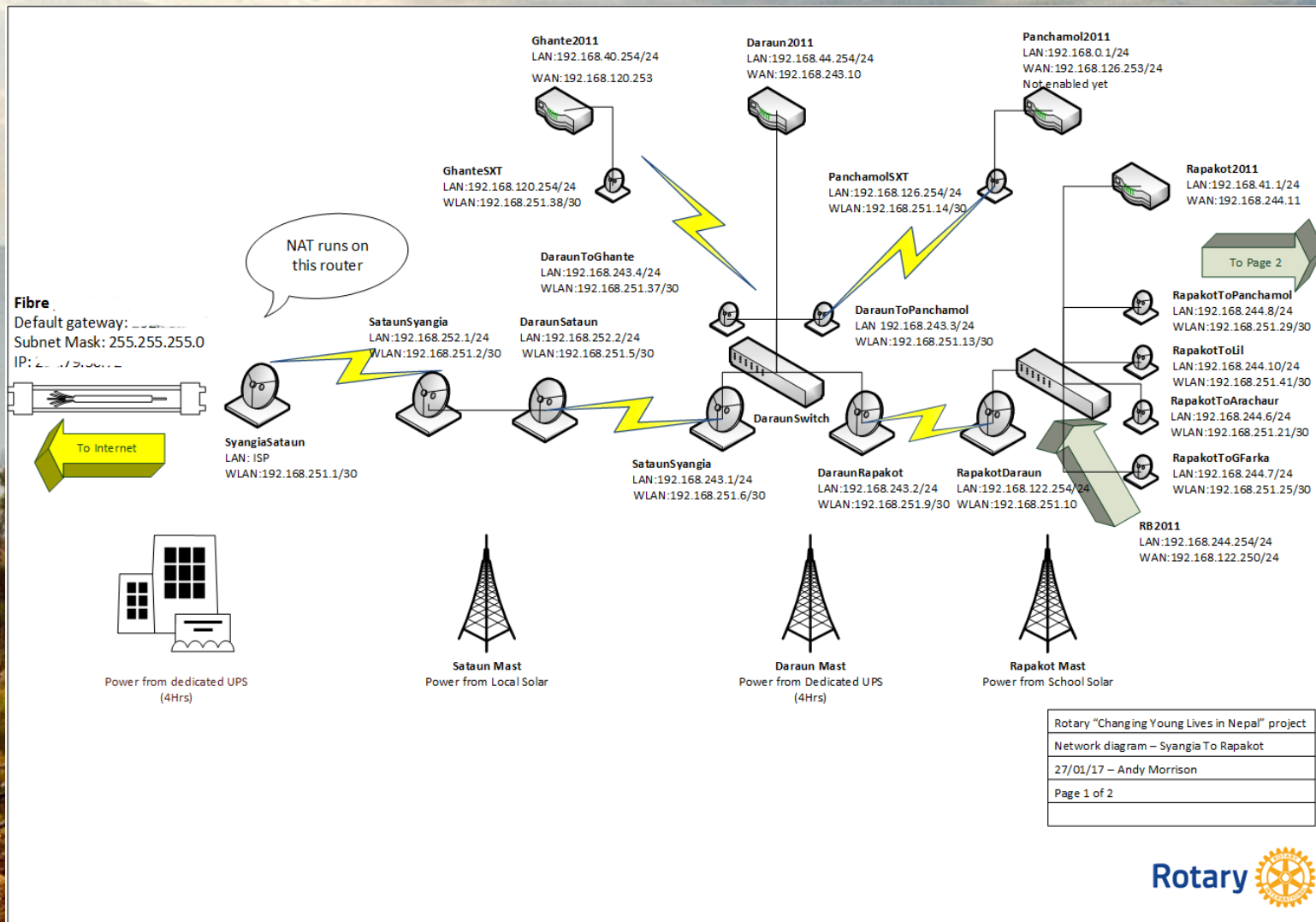


BRIDGES ARE BAD!

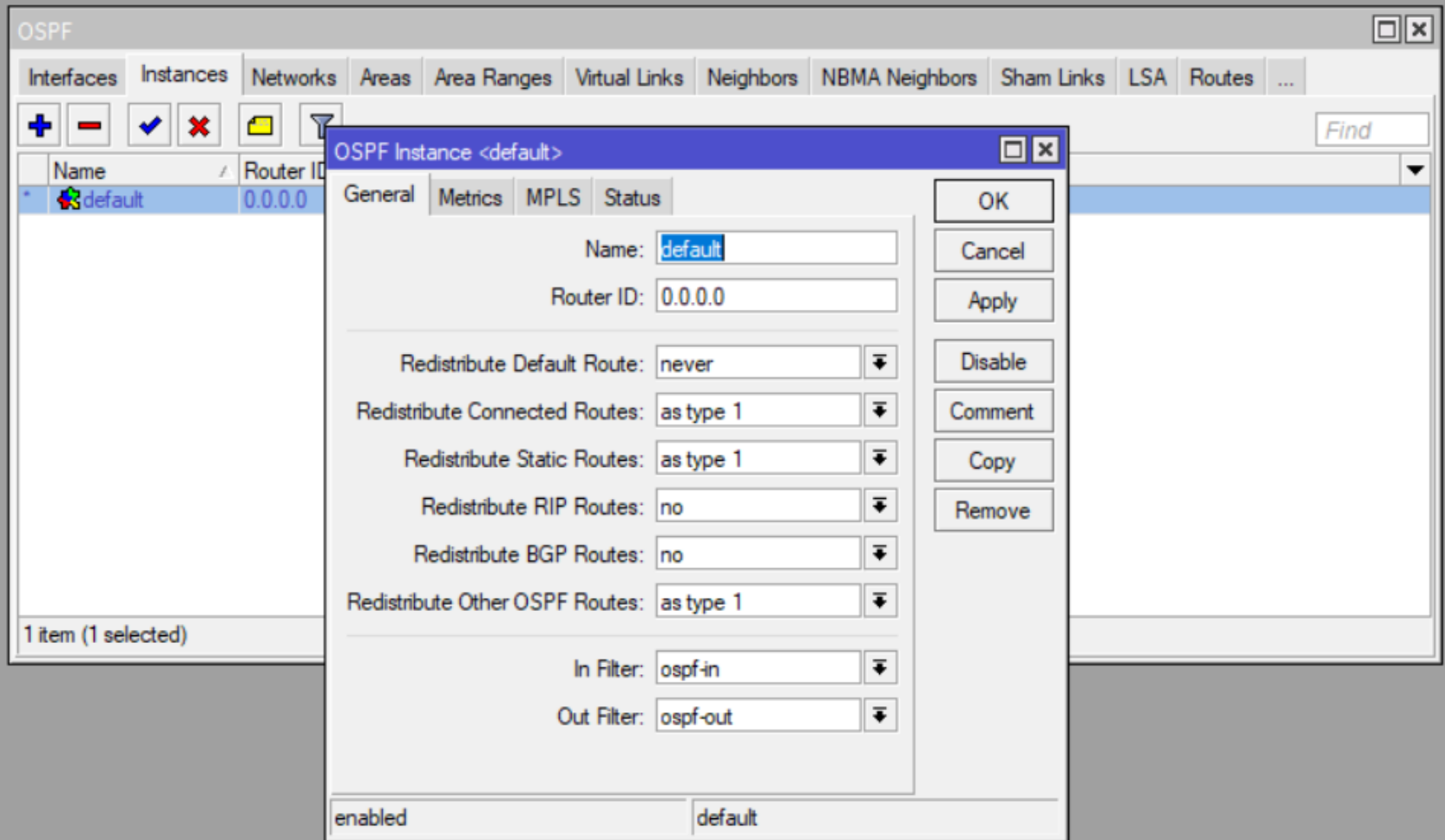
- Don't use one big class C network



/30 NETWORKS OR EVEN /32!



RESILIENCE WITH OSPF

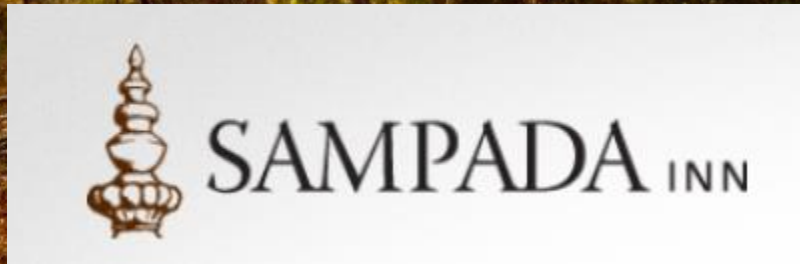


es

RELIABILITY FIXED

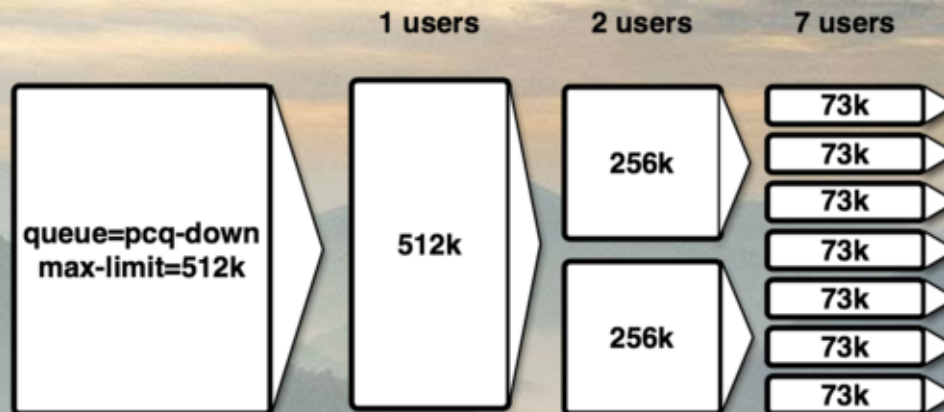
- Always on network
- Time to go fix
- Happy Customers

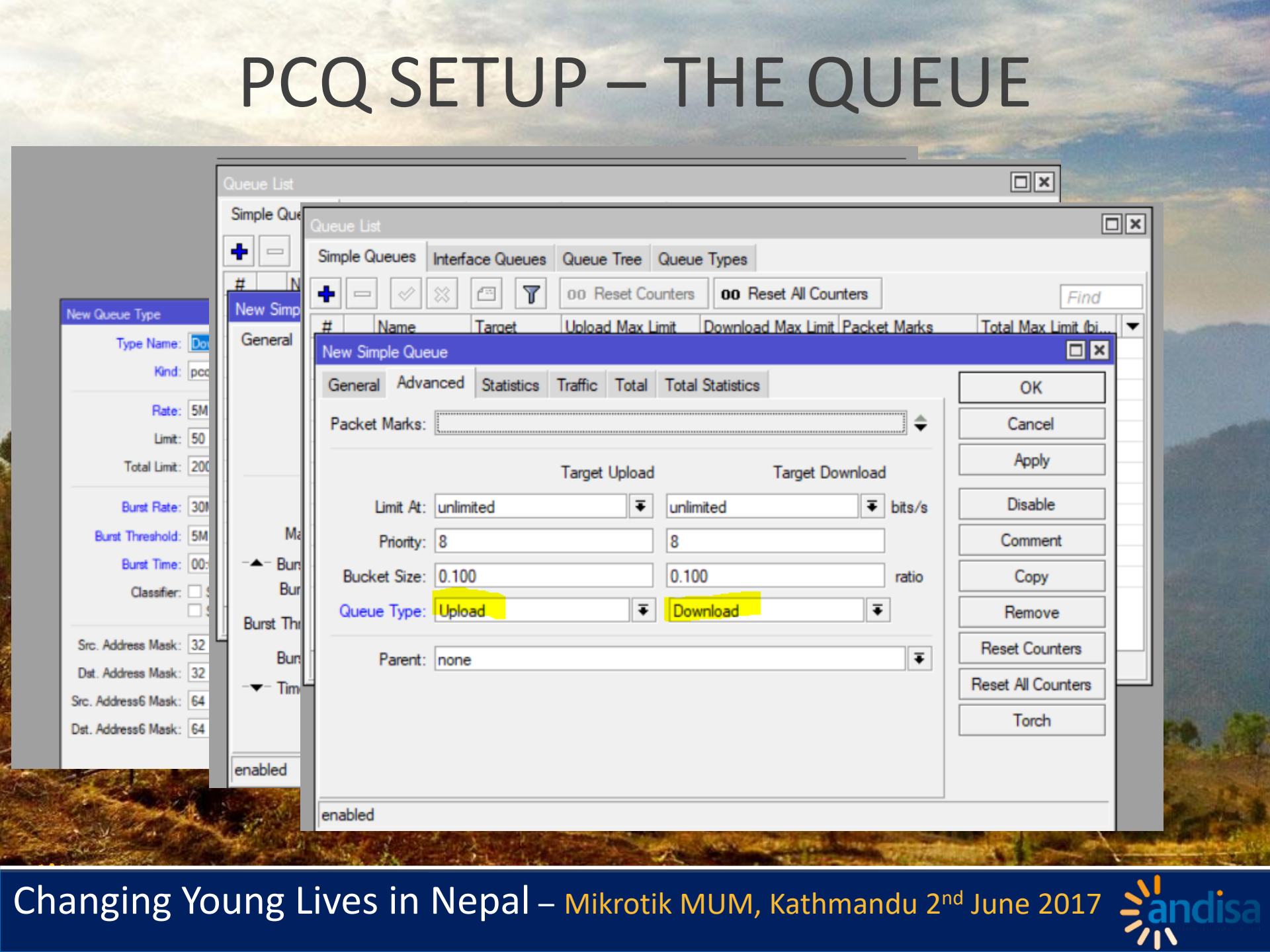
PERFORMANCE



PCQ

pcq-rate=0



[illegible]

PERFORMANCE FIXED

- Equal sharing of bandwidth so everyone's happy
- Bursting so the first few files upload quickly
- Happy customers
- We use this to limit bandwidth per school (one simple queue per school), pay for differing bandwidth.

EASY MANAGEMENT

RoMON Settings

☒ Enabled

ID: 00:00:00:00:00:10

Secrets: *****

Current ID: 00:00:00:00:00:10

OK

Cancel

Apply

Ports

Discovery

Ping

WinBox v3.0rc12 (Addresses)

File Tools

Connect To: 192.168.89.1

Login: admin

Password:

RoMON Agent: 192.168.89.1

☒ Keep Password

☐ Open In New Window

Add/Set

Disconnect From RoMON

Connect

Managed RoMON Neighbors

Refresh

Find

Address	Cost	Hops	Path	L2MTU	Identity
02:FB:47:C6:B7:49	200	1	02:FB:47:C6:B7:49	1500	ISP-Supplies-...
4C:5E:0C:9D:E0:C4	400	2	02:FB:47:C6:B7:49, 4C:5E:0C:9D:E0:C4	1500	ISP-Supplies-...
D4:CA:6D:B3:47:66	600	3	02:FB:47:C6:B7:49, D4:CA:6D:C7:9D...	1500	Cabin-DVR
D4:CA:6D:C7:9D:98	400	2	02:FB:47:C6:B7:49, D4:CA:6D:C7:9D...	1500	DischerCabin

4 items

WHY MIKROTIK

- They survive
- Nv2 – ptmp with varying distances
- Easy management
- PCQ – easy setup
- Certified training is available and important!

PROBLEMS ON OUR PROJECT

- Power
- Add UPS and surge filters
- Fit cables in tubes
- Remove legacy equipment
- Waterproofing of switches

SUCCESS

“Until this morning, I had little hope of competing against those students who had better access to modern education in Pokhara and in Kathmandu. Today is a historic day to all children of this remote Valley”

A pupil from a Panchamul Valley school

WHAT NEXT

- Community internet
- IME
- More schools in next valley
- School twinning exchanges with UK
- Musical concert using internet for rehearsals

QUESTIONS?



TO FIND OUT MORE ...

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