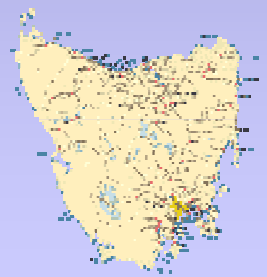
Quantel Australia

- Formed in 1990 in Hobart
- Designed embedded controllers for the University of Tasmania
- In 1993, created the Gatekeeper system.



Quantel Australia

- Have been working on Gatekeeper for seven years.
- Needed a partner to fully realise the product – partnered with Lockwood in 1996.
- 1998 – Lockwood acquired by Assa Abloy – Australian projects halted or terminated.

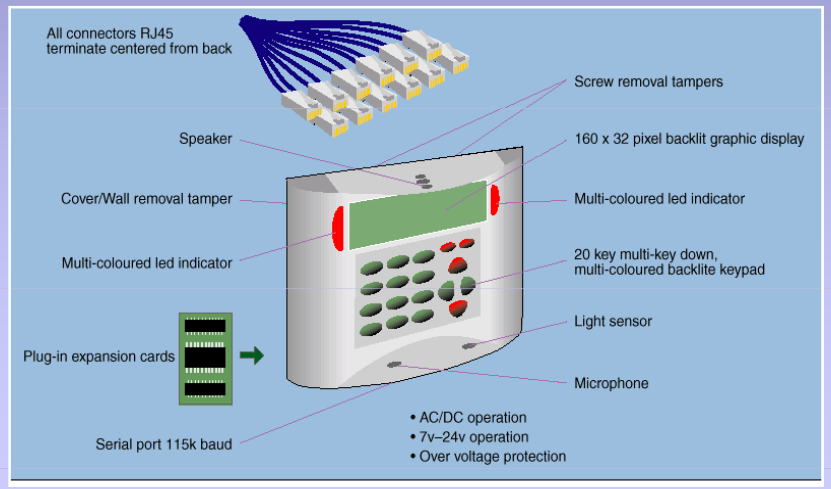
Gatekeeper

- What is Gatekeeper?
  - Advanced, scalable networked security product
  - 100% new design
  - Many innovative features
- Encompasses
  - Access control
  - Building automation
  - Digital video
  - Voice over IP

Quantel

Architecture

- Gatekeeper Sentry
  - Gatekeeper Sentry is central supervisor
  - May be cabinet mounted or deployed in the field
  - Powerful 32-bit processor with 16Mb memory



Architecture

- Access Control and Automation
  - Tiny MPU controllers called “nodes”
  - Different nodes for different functions
    - ERK: Keypad / LCD / universal reader
    - ENG: 4 inputs 1 relay output
    - ENP: Intelligent 240v power outlet control
    - ENL: Intelligent light switch control
  - Nodes may be daisy chained together
  - Very cheap to build, can mix different types
  - “Plug and play” – no manual configuration
  - Hot Pluggable – plug in while the system is on
  - Digital tamper protection

Architecture

- Expansion
  - Can daisy chain up to 20 nodes per port
  - Sentry has four ports
  - Each node can have four inputs and one output
  - Limit is 320 inputs and 80 outputs
  - How to expand beyond this?

Architecture

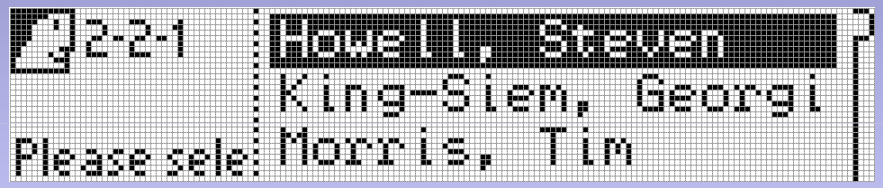
- Security Module Bay
  - SMB's are rack mounted with the sentry
  - Each SMB supports 20 nodes including cable management posts
  - Can interconnect up to 5 SMB's together per sentry port.
  - 1 sentry x 4 ports x 5 SMB's per port x 20 nodes per SMB = 1600 inputs and 400 outputs per sentry.
  - Or 400 doors; or 400 managed power outlets; or 400 light switches –any combination that does not exceed the maximum.

Integration

- How is access control and automation integrated?
  - Nodes of different types can be intermixed; some nodes handle access control while others manage power outlets, lighting and other services.
  - Flexible scripting system can handle most scenarios
  - High powered processor and flexible node system allows realisation of digital video and voice over IP (VoIP).

Migration Path

- Small Sites
  - Single sentry
  - Up to 320 inputs, 80 outputs / doors / readers
  - Configured using keypad…



Sentry LCD

…or text console

Text Console

Quantel

Migration Path

- Medium Sites
  - Multiple Gatekeeper Sentries
  - Add-in module provides Ethernet over any media (UTP, fiber, coax).
  - Configuration via keypad or world wide web
  - Limit remains at up to 320 inputs and up to 80 outputs (less readers)

Migration Path

- Large Sites
  - Many Gatekeeper Sentries
  - Enhanced hardware management with SMB's
  - Encourages structured installations
  - Web-based Java management software
  - When fully expanded supports up to 1600 inputs and 400 outputs

Features

- What does Gatekeeper do that other systems already do?
  - Basic access control
  - Card & code; dual user access; visitor/escort
  - Guard patrol
  - Anti-passback and nested anti-passback
  - Occupancy counting

Features

- What does Gatekeeper do that is new?
  - RJ-45 and CAT-5 standard cabling supported on all interconnects
  - “Hot pluggable” – nodes can be inserted while the system is running.
  - “Plug and play” – Gatekeeper detects a new device when it is plugged in, identifies it, and asks how you want it configured using wizards.
  - Templates – makes configuring standard security products like sensors and door locks very easy

Features

- What does Gatekeeper do better?
  - Flash memory upgrades can easily be done in the field
  - Keypad configuration is performed with easy to use menus
  - Much easier to install and maintain – RJ-45 connections take seconds to install
  - Screw terminals are also supported for installers more comfortable with this technology

Completion Status

Complete

- Gatekeeper Sentry
- Gatekeeper Ethernet network module

- Security Module Bay
- I/O node, reader node, power management node, light switch management node, Wigand interface

- Firmware

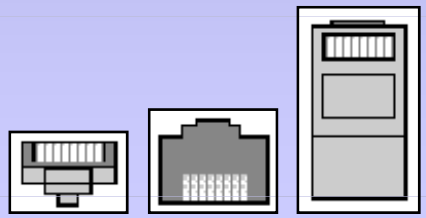
- Dialler module

- Web server

Concept

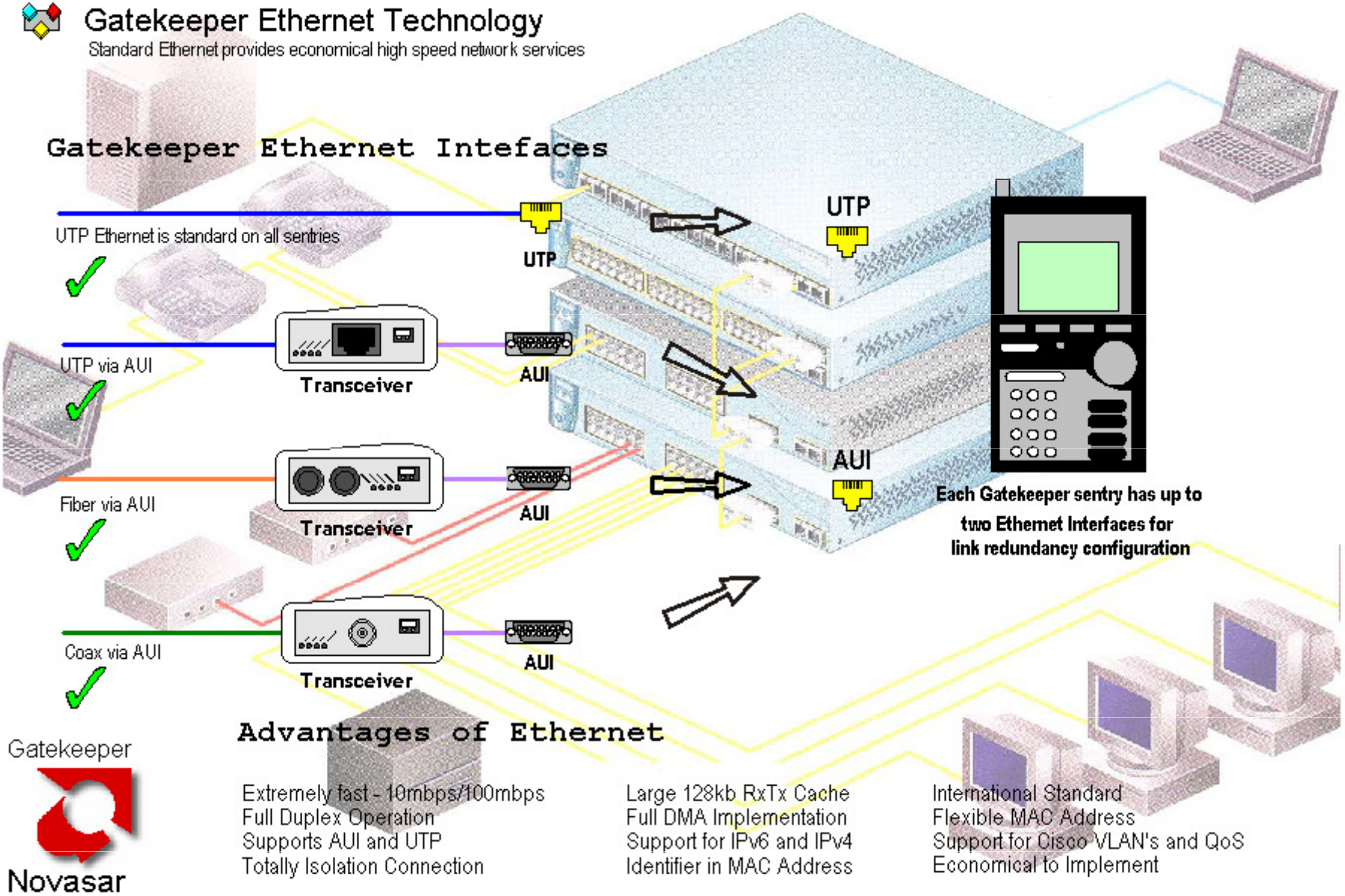
Networking

- Connectivity
  - All system interconnects are RJ-45
  - Communications protocol is TCP/IP
  - Network protocol is native Ethernet with 64 pipelined transmit/receive buffers and DMA



Gatekeeper Ethernet Technology

Standard Ethernet provides economical high speed network services



Gatekeeper

Novasar

Advantages of Ethernet

- Extremely fast - 10mbps/100mbps
- Full Duplex Operation
- Supports AUI and UTP
- Totally Isolation Connection
- Large 128kb RxTx Cache
- Full DMA Implementation
- Support for IPv6 and IPv4
- Identifier in MAC Address
- International Standard
- Flexible MAC Address
- Support for Cisco VLAN's and QoS
- Economical to Implement

Internal Network - Many Sentries to Many Sentries

Standard UTP 10mbps/100mbps high speed Ethernet configuration with VLAN support and 1000mbps trunk.

Gatekeeper
Advanced Web Server
202.198.1.4

202.198.1.2

202.198.1.3

202.198.1.5

202.198.1.6

202.198.1.7

< Sentries and PC connections >

Gatekeeper

Novasar

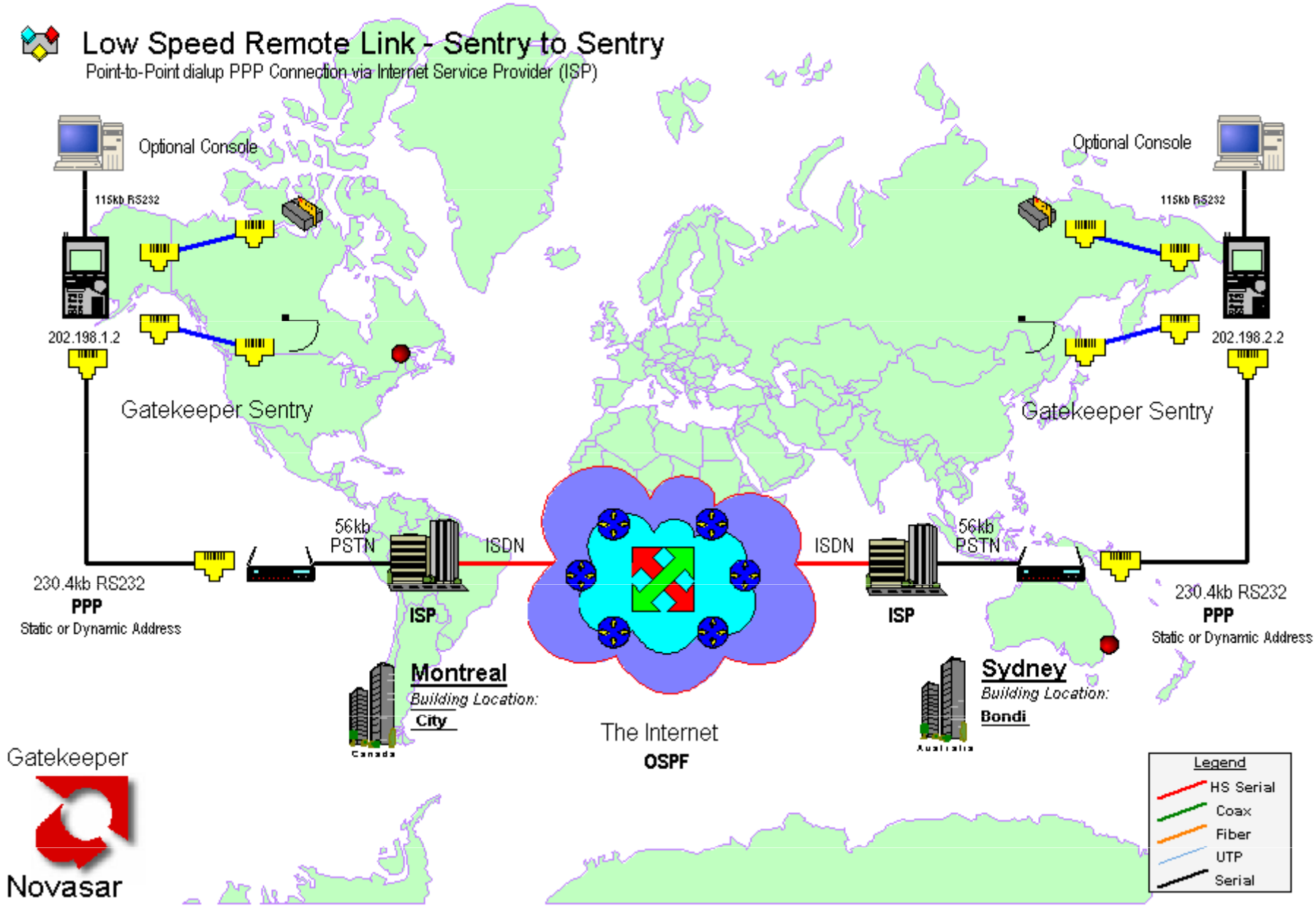
Up to 24 Sentries on a standard Cisco XL2924 Series Ethernet Switch

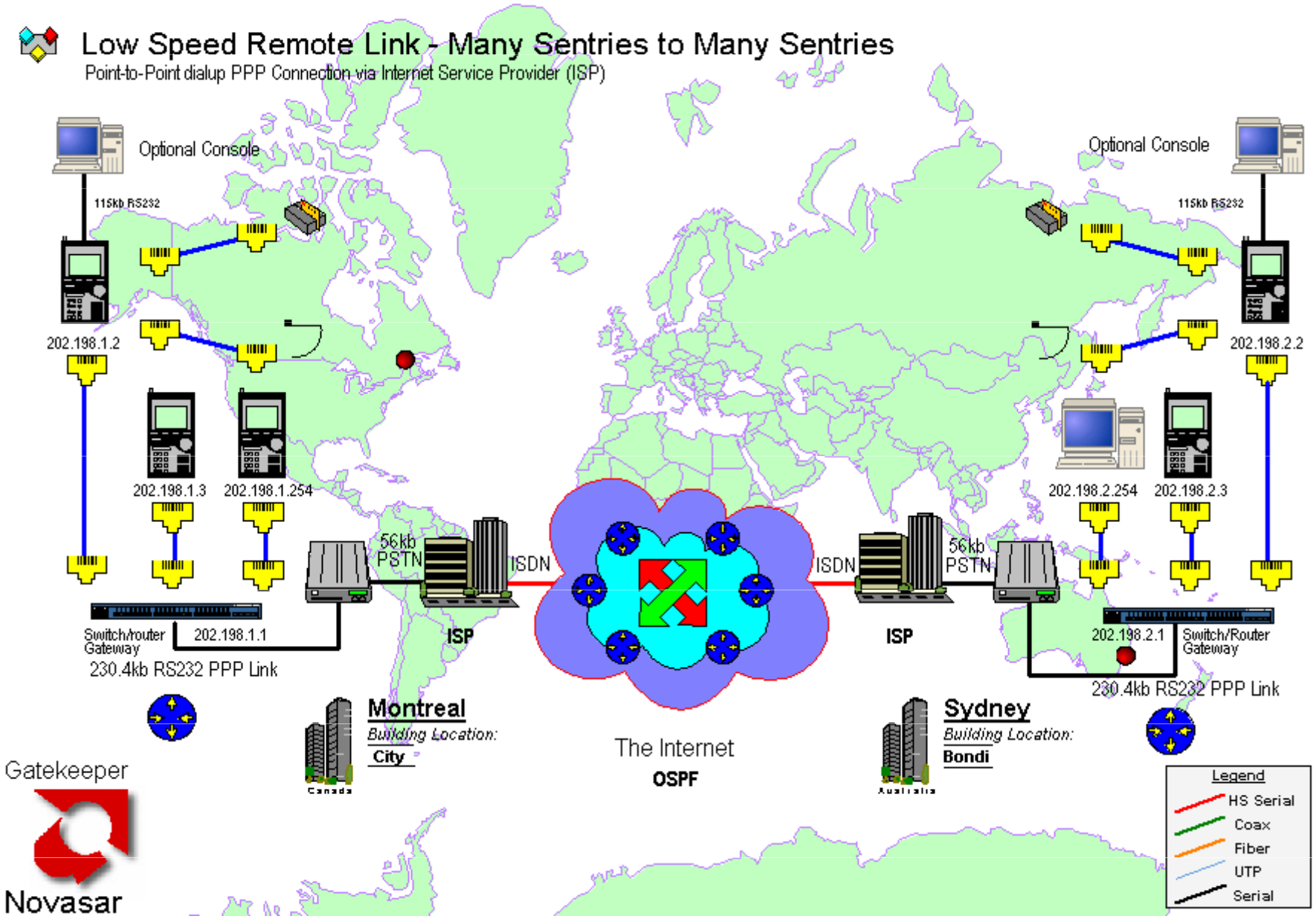
1000mbps TRUNK

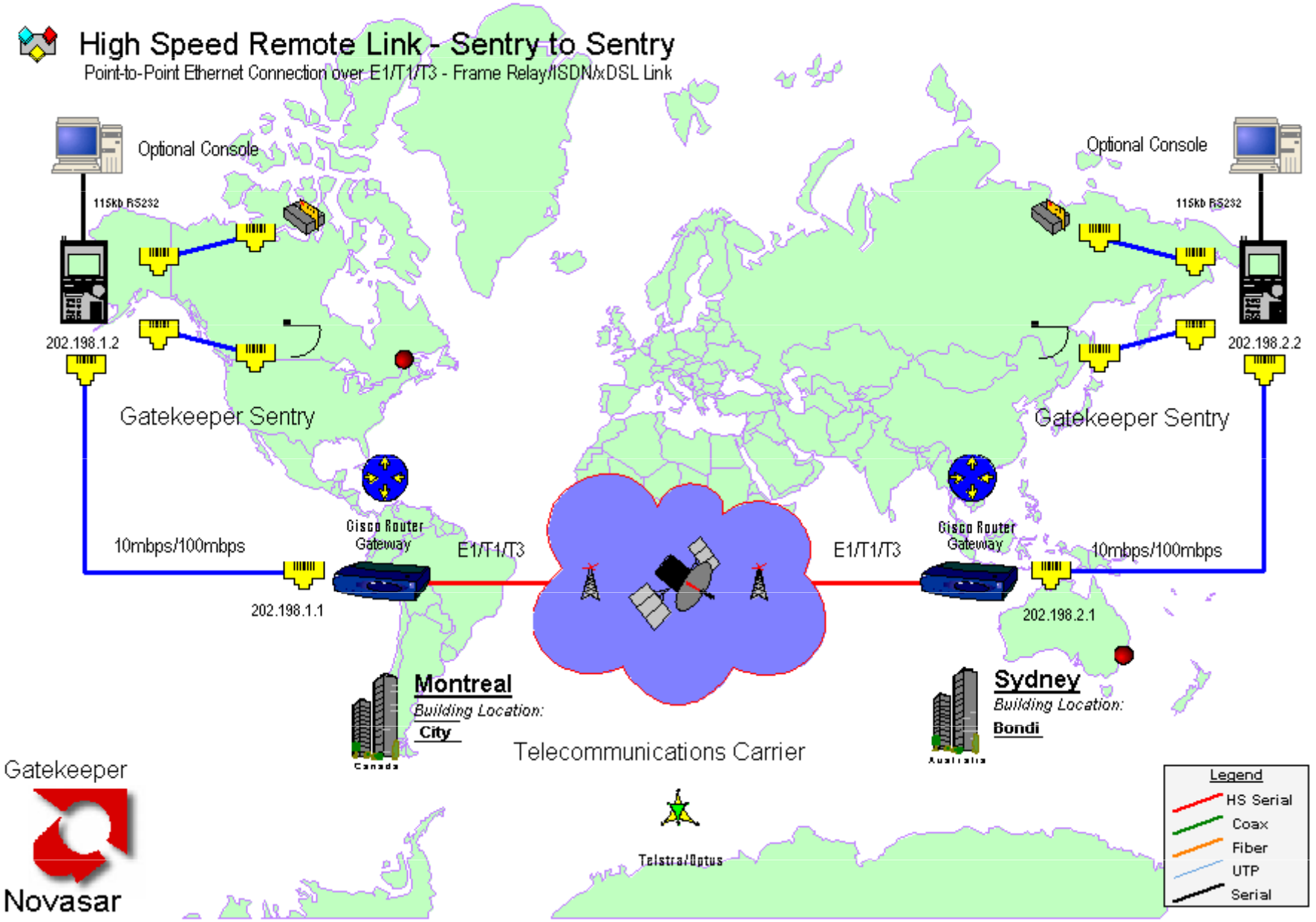
To Other Switches

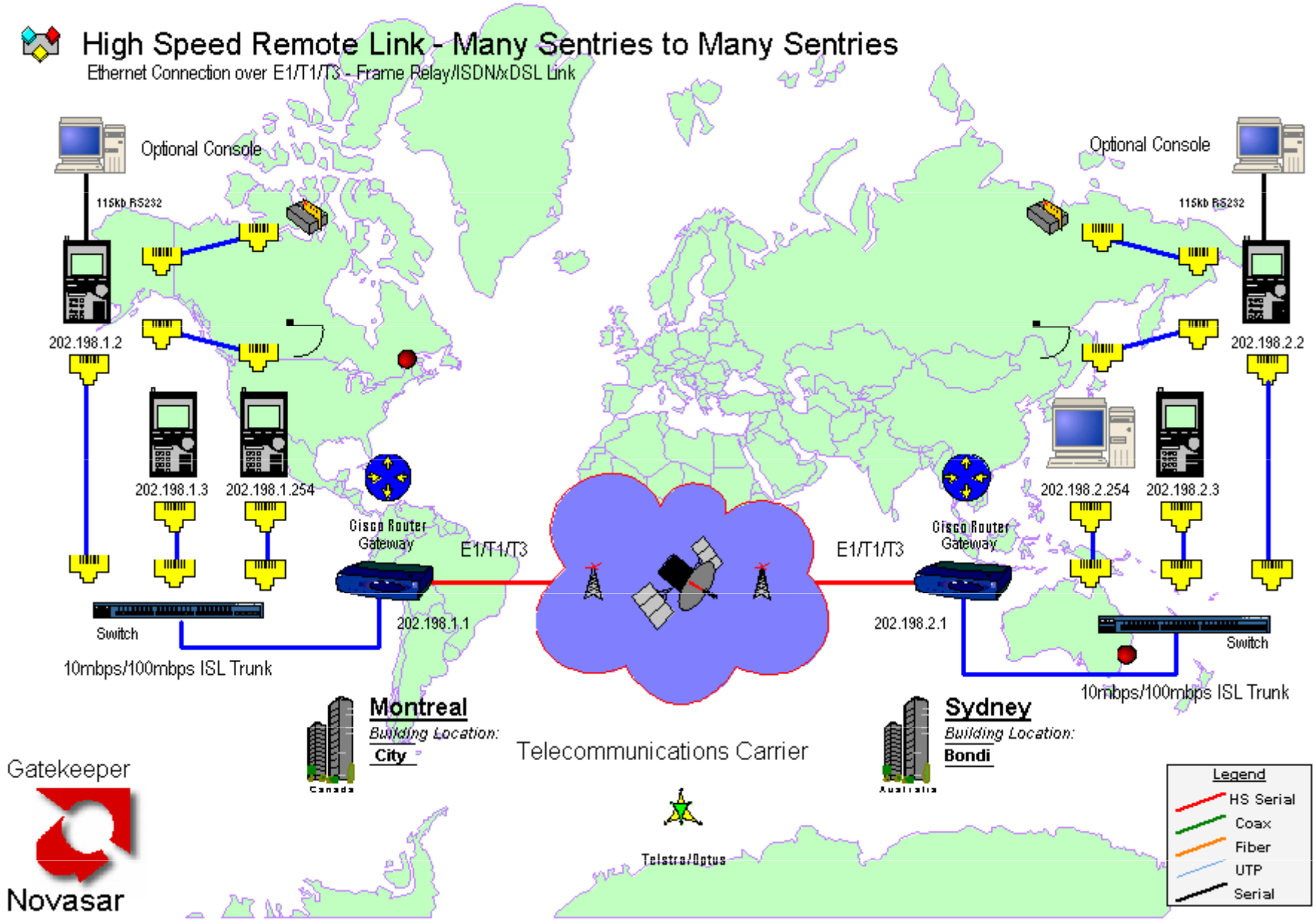
Legend

- HS Serial
- Coax
- Fiber
- UTP
- Serial


Low Speed Remote Link - Sentry to Sentry
Point-to-Point dialup PPP Connection via Internet Service Provider (ISP)
Optional Console
115kb RS232
202.198.1.2
Gatekeeper Sentry
Optional Console
115kb RS232
202.198.2.2
Gatekeeper Sentry
56kb PSTN
ISDN
ISDN
56kb PSTN
230.4kb RS232
PPP
Static or Dynamic Address
ISP
ISP
230.4kb RS232
PPP
Static or Dynamic Address
Montreal
Building Location:
City
Canada
The Internet
OSPF
Sydney
Building Location:
Bondi
Australia
Gatekeeper
Novasar
Legend
HS Serial
Coax
Fiber
UTP
Serial


Low Speed Remote Link - Many Sentries to Many Sentries
Point-to-Point dialup PPP Connection via Internet Service Provider (ISP)
Optional Console
115kb RS232
202.198.1.2
202.198.1.3
202.198.1.254
56kb PSTN
ISDN
Switch/router Gateway
202.198.1.1
230.4kb RS232 PPP Link
ISP
Montreal
Building Location:
City
Canada
The Internet
OSPF
ISDN
56kb PSTN
ISP
Optional Console
115kb RS232
202.198.2.2
202.198.2.254
202.198.2.3
202.198.2.1
Switch/Router Gateway
230.4kb RS232 PPP Link
Sydney
Building Location:
Bondi
Australia
Legend
HS Serial
Coax
Fiber
UTP
Serial
Gatekeeper
Novasar


High Speed Remote Link - Sentry to Sentry
Point-to-Point Ethernet Connection over E1/T1/T3 - Frame Relay/ISDN/xDSL Link
Optional Console
115kb RS232
202.198.1.2
Gatekeeper Sentry
Optional Console
115kb RS232
202.198.2.2
Gatekeeper Sentry
10mbps/100mbps
Cisco Router Gateway
E1/T1/T3
202.198.1.1
E1/T1/T3
Cisco Router Gateway
10mbps/100mbps
202.198.2.1
Montreal
Building Location:
City
Canada
Telecommunications Carrier
Sydney
Building Location:
Bondi
Australia
Telstra/Optus
Gatekeeper
Novasar
Legend
HS Serial
Coax
Fiber
UTP
Serial


High Speed Remote Link - Many Sentries to Many Sentries
Ethernet Connection over E1/T1/T3 - Frame Relay/ISDN/xDSL Link
Optional Console
115kb RS232
202.198.1.2
202.198.1.3
202.198.1.254
Cisco Router Gateway
E1/T1/T3
202.198.1.1
Switch
10mbps/100mbps ISL Trunk
Montreal
Building Location:
City
Canada
Telecommunications Carrier
Telstra/Optus
Optional Console
115kb RS232
202.198.2.2
202.198.2.254
202.198.2.3
Cisco Router Gateway
E1/T1/T3
202.198.2.1
Switch
10mbps/100mbps ISL Trunk
Sydney
Building Location:
Bondi
Australia
Gatekeeper
Novasar
Legend
HS Serial
Coax
Fiber
UTP
Serial

Build Costs

- Gatekeeper Sentry
  - ~$250 for parts, excluding labour and enclosure
- Gatekeeper Nodes
  - Vary from ~$10 to ~$40 each

Summary

- Single sentry can support 80 nodes. Each node can be a reader, a managed power point, a managed light switch or 4 inputs / 1 output.
- With SMB's, this is expanded to 400 nodes.
- Clear migration path from small to large sites – no hardware is wasted.
- System has been designed to make installation and maintenance easy.
- Can be configured using keypad, text console, or web.
- TCP/IP, Ethernet, CAT-5 and structured cabling.

Thank You.