T.U.P.S COMPANY

Remote Mobile Data Centres

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1   What is TUPS?

TUPS is an acronym

Technology, **U**n-interruptible power, **P**ower supply and **S**upport

Explanation of Purpose

When discussing TUPS it is important to understand its business purpose. The purpose of TUPS is to provide a technical solution to rural and remote area computing for both community and commercial use

T.U.P.S is a data centre in a container – for any purpose.

It is shipped to a customer site as a working unit to provide fast deployment of an information technology data and communications centre as a rental set of devices.

The TUPS uses best of breed existing technology to deliver a business outcome to quickly solve a technology problem.

TUPS very purpose is fast deployment, mobility, no-capital outlay, technology delivery that can be removed when no longer required.

It is not a competitive technology to existing technology facilities, simply an alternative that you can have now.

2 Overview

T.U.P.S Company®'s unique **T.U.P.S** transportable data centre allows remote locations to readily deploy new technologies by providing the necessary data centre capacity – whatever the location and with minimal support.

T.U.P.S. stands for Technology, UPS (Uninterrupted Power Supply), Power Generation and Support as it is a fully self-contained, robust and transportable data centre facility. It provides significant data storage and processing capability, wireless communications, disaster recovery capability and IT resource centre capability.

Comprising a combination of existing technologies and TUPS Company's own innovative design and software solutions, **T.U.P.S.** provides an instant solution to the challenges of remote computing.

The **T.U.P.S** solution consists of specially modified shipping containers that are fully equipped and delivered ready to use. Users simply connect the units to their backup power source or use the inbuilt generator running on either Diesel Mineral Diesel or Alternate Bio fuels. Primary power comer from solar energy.

The modular nature of the **T.U.P.S** design means it can be operated as a single unit on a remote site or can be easily scaled to create a major commercial data centre when required.

The solution can be deployed on almost any site, no matter how rough the terrain. Each container features 4 leveling legs for stability and ground clearance as well as self-contained air conditioning to ensure an optimal operating environment is maintained. Power to the site is assured at all times via **T.U.P.S**'s in-built power sources

In addition, the **T.U.P.S** units can be cyclone-rated and are designed for operation in remote areas with no personnel required on site.

Ease of transportation is assured as each component of the **T.U.P.S** solution is housed in standard 20 foot intermodal shipping containers that can be delivered or relocated by any bulk transportation mode. 40 foot containers reduce the viability of delivery to certain areas so we have fitted everything inside a 20 foot unit

Once installed **T.U.P.S** can provide remote sites with:

- Significant wireless network coverage providing local Wi-Fi access as a point to point solution
- Public Access Wi-Fi with advertising and management control
- Localised Web Hosting facilities.
- Local email services (eliminating the need for dial up or ADSL)
- Local chat and messaging services
- Data storage and backup facilities
- Application processing capability (within the licence constraints allowed under software licensing)
- Data storage facilities

3   Why call it T.U.P.S?

T.U.P.S is actually an acronym for the components that we have combined to create an ideal solution to your data centre issues, communications and technology delivery to your customers.

- T - Technology
- U - UPS
- P - Power Generation
- S - Support

Each **T.U.P.S** implementation consists of one or more of the components, delivered in specially modified 20' shipping container/s. Each **T.U.P.S** site can interconnect any or all of the components in any or all configurations.

All **T.U.P.S** components built are designed to be fully customisable and scalable in order to most effectively satisfy individual user requirements.

TUPS Company uses a Capacity on Demand approach. The units are constructed prior to delivery with 120% of the calculated storage and processing capability compared to current customer requirements. This allows for immediate expansion of data and processing should extra capacity be required for any reason.

3.1   Delivery and Installation

The components that make up **T.U.P.S** are housed in intermodal shipping containers which can be safely delivered by road and/or rail.

The components are sited, any required assembly completed and all components connected by TUPS Company staff and/or its installation contractors.

Any required data and/or software is downloaded and/or installed if it was not pre-installed prior to delivery

Ongoing management facilities are provided by TUPS Company or units can be managed by local residents or contractors through a licensing arrangement

TUPS Company ensures that all **T.U.P.S** units are fully working. (a period of five days is allowed for installation and setup time once the **T.U.P.S** components have been delivered to the site)

3.2 Support

All support for your **T.U.P.S** is provided by TUPS Company to ensure you have no support worries during the life of your system. Support contracts are available for specific services as required

4   The Technology Unit

This is a cooled unit that comes fitted with a range of communications and data storage and processing capabilities.

The technology comes pre-loaded with approximately 300 Terabytes of Useable storage in a redundant (mirrored) configuration complete with enough CPU and memory to ensure immediate use.

4.1   Features

- Any type or combination of technologies can be used. All operating systems are supported.
- Communications with the user community are provided through wireless network connections. This can cover up to 5 kilometres from each repeater unit location. (The Technology unit is also a repeater unit)
- The user community can operate between themselves and the container using pre-loaded content.
- Broadband Satellite communications provide internet communications and the ability to upload or download fresh content.
- Built-in Search appliances provide cached internet facilities, saving time and money.
- Can be used as a local hub and data sharing or chat facility
- All components can be deployed on unprepared sites up to 15 degrees from level position, due to leveling legs built in.
- 48 Volt equipment deployed

5   The Power Generation Unit (PGU)

The **T.U.P.S** can use multiple power sources.

Normally, primary power is supplied through Solar panels and battery storage

Backup Power can be supplied from existing infrastructure or where there is no available power, Diesel power generation units are also deployed as part of the PGU

The backup diesel power generation units have been custom designed and feature dual fuel capability to allow for green fuel burning where different blends of fuel are available.

Figure 51 - T.U.P.S Power Generation Unit

5.1   Diesel Power Generation Unit Features

- Up to 400 hours continuous running time on efficient generation plant
- Dual fuel options built in to reduce carbon footprint and run up to 100% Bio fuels automatically
- Remote Wireless Management from Technology Unit
- Fully self-contained with inbuilt fuel cells
- Solar panel bracket and up to 90 battery storage.
- 48 Volt delivery for safety

Figure 54 - T.U.P.S Units heading for Site

6   The Support and Mast (Repeater) Unit

The Support Unit contains spare parts, cabling for interconnect of **T.U.P.S** components and sometimes even a support vehicle. The vehicle is left on the site to act as an additional pair of hands when re-assembling components

6.1   Dual Purpose

The TUPS Support Unit doubles as a mast container with a self-raising mast for fast deployment

Antennas are 48 volt powered

7 Uses for T.U.P.S

T.U.P.S can be deployed in many situations to solve many problems.

We have identified just a few potential uses for **T.U.P.S**. As more uses are identified, we will add them to our list.

7.1 Educational or Community Resource Centre

As **T.U.P.S** can be filled with content prior to delivery and that content updated as required, **T.U.P.S** is an ideal solution for delivery of "safe" content to the user community. TUPS Company can provide Google appliances and internal messaging program capabilities so the user community can use any browser to access the content.

Example: locate **T.U.P.S** near the local shire office and provide a technology solution for the entire community.

- Data and files can be shared.
- Use them for advertising purposes (the same way city dwellers use the internet to find the goods they purchase).
- Chat over the network with friends and family.
- Broadband Internet time can be managed through our gateway (provided) on an time or quantity basis (or any charging or free delivery model) in a similar manner to a hotel broadband system.
- Go online with the local library.

7.2 Disaster Recovery Centres

Use **T.U.P.S** as your disaster recovery centre.

Should you have a disaster and your facility is no longer available, simply pick up and re-locate **T.U.P.S** to where your data centre used to be.

No need to move staff.

All the data you had yesterday is available today

7.3 Capacity on Demand

Capacity increase on demand as your existing data centre needs to grow.

Use **T.U.P.S** as your capacity on demand data centre.

T.U.P.S removes long wait times for technology upgrades.

T.U.P.S can be removed when your data centre is upgraded

8 Frequently Asked Questions

Problem: Delivering content to customer is limited by external communications

Solution: TUPS can be loaded and updated over Satellite, Mobile , Microwave, Optical Fibre or coppered wired internet. Regardless of where TUPS is located, satellite domes self-seek so that setup and reconfiguration can be done remotely

Problem: Delivery to customers is limited by connectivity.

Solution: By locating the infrastructure in proximity to the local exchange, content can be delivered directly from TUPS with connectivity hard wired to a telephone exchange.
Alternatively, TUPS comes equipped with wireless antenna's that can deliver wireless network coverage over unlicensed spectrum.

Problem: Current mini data centre deployments require significant local ground preparation. Solution needs to be able to operate on unprepared surface.

Solution: TUPS is self-leveling using custom hydraulic legs.
Up to 15 degrees on any surface type

Problem: Cooling of solution needs to be independent of other device cooling mechanisms.

Solution: TUPS is self-cooling using coling units mounted inside container structure

Problem: System needs to have guaranteed uptime beyond local supply of power or there is no grid power

Solution: TUPS comes with completely independent power supply, backup power supply and independent UPS

Problem: Remote communications, support and monitoring capability need to be suited to this type of operation.

Solution: TUPS is remotely managed and can self-diagnose problems for repair by remote operator

Problem: What about internal equipment failure?

Solution: TUPS has full redundancy of equipment in case of failure of any component

Problem: How can we be sure that customer guarantees and expectations

can be met?

Solution: TUPS is configured with full computer equipment redundancy and fail-over capacity for all internal components. This is soft switched from remote operator console.

Problem: How can I deal with all type of end user security and network requirements as well as personal operating system requirements?

Solution: TUPS management personnel are fully trained in operating system and security management processes. Even the physical TUPS components communicate over their own secure wireless network.

Problem: Customer must be able to communicate at all levels (i.e.: wired, wireless, satellite, mobile broadband.

Solution: TUPS supports all these communications methods.

Problem: Must be low operational cost.

Solution: TUPS uses modern power efficient equipment. Even the generation plant can operate on "Green" fuel systems.

Problem: Must be low capital cost, even OPEX only.

Solution: You don't need to buy TUPS; you can rent it and send it back when you no longer need it.

9   More Questions

9.1   Who is the TUPS company?

The TUPS Company, an Australian-owned, private organisation is managed service provider that delivers cost effective technology solutions to consumers and businesses which include offsite backups, local web page hosting, emails and internet connectivity.

The TUPS Company constructs containerised, portable data centres that are remotely maintained and managed and known as TUPS Units.

9.2   What is TUPS?

TUPS is an acronym for the components that have combined by The TUPS Company to create an ideal solution for data centre issues, communications and technology delivery to customers:

- T - Technology, being the Computing Technology and Communications Equipment
- U - UPS Instant power replacement
- P - Power Generation

- S – Support Required personnel, equipment and back up of all data

9.3   What is unique about TUPS? What are the benefits of TUPS?

TUPS is a cost effective way for regional, rural and remote communities to access data communications services that include broadband internet and remote computing services.

As the TUPS solution is housed in standard shipping containers they can be easily transported by road, rail or air to even the most remote locations.

TUPS can be run independently of any power source or other infrastructure.

9.4   Why was TUPS developed?

TUPS was developed to provide cost effective managed services and internet connectivity to remote and regional areas.

Internet connectivity is enjoyed by many urban users throughout Australia. However, many users outside these metro areas – regional, rural and remote – are still unable to access high speed internet due to the restrictions of time, cost and distance.

TUPS was designed to answer these challenges. As it is costly to run cables over large areas, The TUPS Company developed a unique network layout that uses long range wireless devices to allow to deliver cost-effective connectivity and to increase connectivity speed where connections are slow.

9.5   Doesn't ADSL do an adequate job in regional areas – why is TUPS necessary?

Many people are not aware of the limitations of ADSL. ADSL can only be used by premises that are approximately 3 km from the locally enable exchange. Beyond that it leaves regional, rural and remote users in Australia with only two options – access via the old, slow copper wire infrastructure laid many years ago, mobile broadband or expensive satellite technology for their connectivity needs.

TUPS provides an effective alternative that is affordable, fast to install and available to everyone I – irrespective of location.

9.6   What happens when the NBN does come to my area?

NBN Co is a Wholesale provider. NBN an connect ot the TUPS and you can continue to gain access the way you do now. I, as a result of NBN being connected there was a proce reduction, this would immediately be passed on to the TUPS customers

9.7   Does TUPS compete with the NBN?

No, definitely not. NBN customers will actually be the telco's and ISP's who will retail the product to you. TUPS is also your own data centre running locally. NBN is not offering this service.

9.8   What was the significance of the Gunnedah Community Wifi event?

The launch of the Gunnedah Community Wi-Fi represented a functioning example of how many regional, rural and remote communities around Australia and the world can overcome the challenges posed by distance for the data communications and internet connectivity requirements.

In effective, TUPS provides the "last mile" of connectivity to regional and remote users. The last mile is as term that covers the final of part of internet connectivity chain -- from a communications provider direct to a customer's premises. The last mile is traditionally problematic for both

telecommunications providers for whom it is expensive to provide the necessary links to all premises particularly in more remote locations. For consumers in such areas this means reduced connectivity choices.

Australia is a large nation physically; our communications are challenged by the economics of delivering fibre optic cable to all premises in Australia, irrespective of location.

Despite the availability of ADSL in regional areas, many users cannot access the technology as ADSL can only work when the premises is located close to the exchange (approximately 2.5km).

As a result many rural and remote users have had to choose from slow dial-up services over the traditional copper telephony system or costly satellite communications. This leaves a very large proportion of Australians – the so called 'last mile' with no broadband communications at all.

TUPS provides such users with an alternative -- cost effective, fast to install internet connectivity.

9.9   What about the "fibre backbone" that Telstra and other operators have installed in many Australian country towns doesn't this cover rural and regional areas?

The broadband infrastructure installed by Telstra and other providers is absolutely fine right in town. However, the final the final connection to the users' premises over the "last mile" is still copper and therefore very slow.

Even where a "fibre backbone" has been installed with fibre optic connections to the providers' exchanges in most suburbs and major country towns -- the final connection to the premises over the last mile is still copper.

The Gunnedah Community Wi-Fi provides local businesses in the Gunnedah area with cost effective, high speed managed computing services that include broadband internet access.

9.10   Broadband is expensive to install – the cost of the NBN have been reported as being in the billions – how will you provide a cost effective alternative broadband solution?

The TUPS solution is modular. Users buy only as much as they need. It is also componentised drawing on existing technology with little need for costly modifications.

TUPS can be quickly configured to create a data centre or a communications hub – according to the number of users in the community. More units can be readily added to expand the capacity.

The TUPS implementation gives users outside of metro areas the buying power that is available to those in the city without compromising on the quality and speed of the internet service.

Cost effective internet access is guaranteed via a community buying approach that creates greater buying power. TUPS allows the customers to operate like a co-op when it comes to buying services, making them much cheaper overall

9.11 Is the TUPS solution scalable – can extra capacity be added at a later time?

Yes, the solution is fully scalable by virtue of its fully modular design. Extra container units can be simply shipped and quickly contented to added extra bandwidth, data storage capacity and/or users.

9.12 How would TUPS connect very remote communities who are a long way from broadband infrastructure at the moment?

TUPS transmits via Wi-Fi and although the TUPS Wi-Fi range is 4.0 km from base station to customer repeater stations can be readily installed to extend that range in 16 or 32 Km hops. For example, repeater stations can be installed at the TUPS installation at Gunnedah to link to nearby towns that do not have fibre connections. A TUPS communications unit can then be installed in that remote town to service all users within a 4.0 km radius.

Moreover it may be a long time for remote communities to wait for the NBN to come directly to their premises.

9.13 What other capabilities beyond internet connectivity does TUPS provide?

TUPS technology provides wireless, connected, stand-alone remote server capability to its customers. This in effect means cloud computing can be readily delivered to more remote areas in Australia.

Thereby TUPS is able to save local business and major operators the cost of purchasing server equipment, installing the required programs, installation costs of the server, the LAN cabling and the need for back up facilities and the time involved as well as the ongoing costs of IT support.

9.14 What is the market potential for TUPS in Australia and overseas?

Given Australia's large land mass many potential users outside the cities are currently faced with either slow outdated infrastructure (copper) or the option of expensive satellite to become connected with the rest of the world via the internet.

Consequently there is a huge potential for TUPS both in non-metro areas in Australia and around the world particularly in underdeveloped countries who communications or power infrastructure is not sophisticated.

TUPS could be used by the mining industry, medical practices, accountants, large stores and medium size businesses in regional, rural and remote areas.

The TUPS Company can also compile a website for its business user for a fee. Such a web site would be almost impossible to operate practically in a 56 KB dial up environment. Instead it can be stored and hosted in the TUPS unit and modified locally and access to the resulting enquiries passed on to the local owner of the website.

9.15 What about security?

The TUPS power units feature instant power back up (called a UPS) should there be a power failure.

The TUPS data is replicated inside the TUPS for fail-over (in case of equipment failure) and another backup is sent off-site 500KM away) for disaster recovery

The TUPS UPS unit sits alongside the technology unit to ensure 24 x 7 up time and power smoothing capability.

Each UPS unit has a modular design to allow for it to run more than one technology unit or to run one technology unit for an extended period of time.

Data security is assured by point to point WI-Fi signal being encrypted to only that device pair

9.16 How is TUPS powered?

TUPS can use multiple power sources. Power can be supplied from solar panels backed up by existing infrastructure or where there is no available power, diesel power generation units are included.

The power generation units have been custom designed and feature dual fuel capability to allow for green fuel burning where different blends of fuel are available.

10 USE CASES

TUPS will support any business model.
Takes only days to deploy – not months.
The expertise has already been included

10.1 TUPS IN MINING

TUPS can be deployed quickly in any environment to provide or supplement existing infrastructure for use in all types on mining projects.

TUPS can be configured to monitory and/or control telemetry devices.

TUPS can be used as you would use an existing data centre in the company head office

TUPS can be used to support SIP (VOIP) traffic, providing mobile telephone coverage where there is none.

10.2 TUPS IN THE COMMUNITY

TUPS can be deployed anywhere in a remote or rural community.

TUPS can provide local search engine, local web hosting and application hosting

TUPS can be seen as a free to air mobile network.

Backhaul speeds up to 300 Mbps allow for community voice traffic

TUPS can be the point of interconnect back to a fibre backbone

10.3 TUPS IN THE SCHOOL

TUPS can be used to provide wireless connectivity to students after they leave school and go home to study.

TUPS can host the entire curriculum.

TUPS can provide completely safe internet

10.4 TUPS EVERYWHERE YOU CAN THINK OF

Short term, long term, low cost,

TUPS

Ready to go now....in a town far away
Want steak knives with that?....