

# More efficient networks. More possibilities

The Tait TN9400 core network is the heart of the second generation Tait P25 trunked solution with IP connectivity. Tait TN9400 trunked networks are digital systems specifically designed to provide mission-critical communications over wide geographic areas. Tait TN9400 trunked networks are extremely resilient, with multiple levels of redundancy for reliable communications you can depend on.

The TN9400 is responsible for establishing calls for the radio fleet. The highly flexible and scalable design of the Tait TN9400 allows your organization to deploy a cost-effective infrastructure to meet your communication and operational needs now and in the future.



## KEY FEATURES

- ▶ Future proof system supporting multiple operating modes (P25 trunking Phase 1 and Phase 2)
- ▶ Compliance with P25 standards enables interoperability, greater choice, and network expansion
- ▶ Robust design provides high availability for reliable communications
- ▶ Scalable and flexible for efficient and cost-effective network design
- ▶ Secure communications
- ▶ Efficient operations with remote configuration and fleet management
- ▶ Improved worker safety with voice and data

## FEATURES AND BENEFITS

### The heart of a Tait P25 trunked network

A complete Tait P25 trunked communications system, including mobile and portable radios, base station/repeaters and a trunked core network, is designed, built and tested by Tait to the highest standards for quality you can be assured of.

A single-sourced P25 trunked network reduces the risk of network elements not interoperating, and also provides one point of contact for network service and support.

Genuine commitment to P25 open-standards ensures opportunities for multi-vendor solutions with standardized interfaces.

### Future proof system supporting multiple operating modes

The TN9400 supports the TIA P25 standards and interfaces for network interoperability and potential network expansion.

- ▶ P25 Phase 1 trunked and trunked simulcast operation
- ▶ Software upgradable to P25 Phase 2 trunking operation
- ▶ On-going P25 Compliance Assessment Program (P25 CAP) testing for interoperability and mutual aid.

### Compliance with P25 standards enables interoperability, greater choice and network expansion

The TN9400 makes it easy to connect to other P25 networks and equipment with:

- ▶ Phase 1 ISSI (Inter-RF Subsystem Interface) for connection to four P25 systems
- ▶ Phase 1 and Phase 2 CSSI (Console Subsystem Interface) for connecting the TN9400 to multiple console and voice recorder vendors.

### Robust design provides high availability for reliable communications

The TN9400 has multiple levels of redundancy to ensure continuity of operation in the event of server failure, including:

- ▶ RFSS (Radio Frequency Subsystem) redundancy
- ▶ Site controller redundancy
- ▶ Isolated site operation with failsoft repeaters

Highly available server clusters are constantly mirrored and will changeover within 5 seconds in the event of a hardware or software failure.

Site trunking ensures that operation continues even if a site is disconnected from the network. Failsoft is designed to ensure operation in the event of a site server/s failing.

### Scalable and flexible for efficient and cost-effective network design

TN9400 systems ensure efficient network design and scaling with IP connectivity. The TN9400 is scalable to cater for the different traffic load demands at each site, and provides:

- ▶ Maximum spectrum use with trunking and simulcast
- ▶ Maximum site spacing with Linear Simulcast Modulation (LSM) and Phase 2 Simulcast (H-DQPSK)
- ▶ A Phase 1 Trunked Analog Gateway (TAG), which enables connection to legacy analog consoles
- ▶ A Phase 1 PSTN gateway
- ▶ A flexible network design with IP connectivity

### Secure communications

Security and privacy are delivered with:

- ▶ Centralized authentication to rapidly revoke network access
- ▶ Access levels and control to modify network settings

- ▶ Network access logs for history of changes, if required
- ▶ End-to-end encryption
- ▶ OTAR capability (TIA standard)

### Efficient operations with remote configuration and fleet management

The web-based user interface allows easy remote configuration and management of system elements, including:

- ▶ Channel management
- ▶ Control channel authorization
- ▶ Fleet management for greater control of resources
- ▶ Create, modify and delete talk groups
- ▶ Set call priority
- ▶ Software upgrades ensure your network runs in an optimal manner
- ▶ System/network configuration changes
- ▶ IP Packet Data
- ▶ Operating System SNMP
- ▶ Auditing capabilities, such as, log files – with selectable logging levels, audit trail to identify system changes

### Improved worker safety with voice and data

The TN9400 system ensures that workers can communicate when and how they need with both voice and data. The TN9400 supports:

- ▶ Multiple call types, including: Phase 1 group, system and emergency, announcement group, unit-to-unit, PSTN and Data Calls. And Phase 2 group, system and emergency calls
- ▶ Standard P25 radio services, including: call alert, radio check, status updates and queries
- ▶ A standard based IP data pipe (EnableIP) to enable application data to be sent over the system
- ▶ Short messages (text messaging)
- ▶ Unit Monitor

<b>RF SYSTEMS SUPPORTED</b>	<b>Phase 1</b>	<b>Phase 2</b>
Simulcast	Yes	Yes
Rx voting	Yes	No
<b>INTERFACES</b>	<b>Phase 1</b>	<b>Phase 2</b>
ISSI	Yes	No
PSTN	Yes	No
CSSI	Yes	Yes
<b>SUBSCRIBER MANAGEMENT</b>	<b>Phase 1</b>	<b>Phase 2</b>
Add/remove single subscriber	Yes	Yes
Add/remove multiple subscribers	Yes	Yes
Customize call type permissions	Yes	Yes
Add/remove multiple talk groups	Yes	Yes
Add an announcement call group	Yes	Yes
Add a system call group	Yes	Yes
<b>RFSS</b>	<b>Phase 1</b>	<b>Phase 2</b>
Transmission trunking + quasi message trunking	Yes	Yes
Subscriber unit (re-)affiliation with talk group	Yes	Yes
Subscriber unit registration/deregistration	Yes	Yes
Group call	Yes	Yes
Talk group ID	Yes	Yes
Group call late entry	Yes	Yes
Announcement group call	Yes	Yes
Encrypted group call	Yes	Yes
Emergency group call	Yes	Yes
Call queuing	Yes	Yes
Call priority	Yes	Yes
Unit-to-unit call	Yes	No
Call alert	Yes	Yes
Short message	Yes	Yes
Priority talk group scanning	Yes	No
Radio check	Yes	Yes
<b>PSTN GATEWAY</b>	<b>Phase 1</b>	<b>Phase 2</b>
Unit-to-PSTN call	Yes	No
PSTN-to-unit call	Yes	No
PSTN-to-group call	Yes	No
<b>FAULT TOLERANCE</b>	<b>Phase 1</b>	<b>Phase 2</b>
High Availability failover from primary to secondary server (hardware failure)	Yes	Yes
High Availability failover from primary to secondary server (network failure)	Yes	Yes
High Availability failover from primary to secondary server (software failure)	Yes	Yes
Disaster recovery node handover - manual activation	Yes	Yes
Isolated site (network failure). Switch to single site trunking at that site.	Yes	Yes
Backup control channel. (Base station failure). Control channel allocated to a different base station.	Yes	Yes
<b>CSSI</b>	<b>Phase 1</b>	<b>Phase 2</b>
Group call	Yes	Yes
Unit-to-unit call initiate	Yes	Yes
Unit-to-unit call receive	Yes	Yes
Emergency group call	Yes	Yes

**GENERAL**

Feature	Phase 1	Phase 2
Voice call types	Group, individual, all call. broadcast, emergency, PSTN	Group, all call, broadcast, emergency, Intersite, console, pre-emption of Phase 2 (and other soon to be released)
Non-voice calls	All standardized P25 supplementary services- status, radio check, monitor, inhibit/uninhibit	All standardized P25 supplementary services- status, radio check, monitor, call alert, inhibit/uninhibit
Modes of operation	P25 Phase 1, P25 Phase 1 trunked simulcast, P25 Phase 1 trunked LSM	P25 Phase 2 trunked, P25 Phase 2 simulcast
Channel frequencies	Channel addressing supports the use of non-continuous frequency allocations	Channel addressing supports the use of non-continuous frequency allocations
Channels per site	23 traffic channels, plus control channel	23 traffic channels, plus control channel
Number of sites	Supports up to 28 physical sites distributed over up to 20 logical sites	Supports up to 28 physical sites distributed over up to 20 logical sites
Number of talk groups	600	600
Number of radios supported	10,000	10,000
Tait repeaters supported	P25 TB9100, P25 TB9400	P25 TB9100 (Control Channel), P25 TB9400
Supported server	Dell	Dell
Environmental specification of server	+50°F to +95°F (+10°C to +35°C) operation	+50 F to +95 F (+10 C to +35 C) operation
Maximum radios registered at a site	10,000 radios	10,000 radios
Encryption support	Passes encrypted transmission - AES, DES	Passes encrypted transmission - AES, DES
Talk group scanning	Supported	Supported
Interfaces supported	CSSI, ISSI, Trunked Analog Gateway (TAG)	CSSI
Integrated console and voice Recorder	Supported	Supported
PSTN	Supported	Not Supported
Redundancy	RFSS site	RFSS site
P25 CAP tested	Passed	Phase 2 standard
Late entry to group calls	Supported	Supported
Queued calls	Supported	Supported

Specifications are subject to change without notice and shall not form part of any contract. They are issued for guidance purposes only. All specifications shown are typical.

\*Contact your local Tait representative for more information.

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Tait Limited facilities are certified for ISO 9001:2008 (Quality Management System), ISO 14001:2004 (Environmental Management System) and ISO 18001:2007 (Occupational Health and Safety Management System) for aspects associated with the design, manufacture and distribution of radio communications and control equipment, systems and services. In addition, all our Regional Head Offices are certified to ISO 9001:2008.

