Tough and efficient P25 trunked Phase 1 and Phase 2 system for Public Safety mission critical networks.

The Tait TN9400 core network is the heart of the second generation of Tait P25 trunked solution rich in features and interfaces. Tait TN9400 trunked networks are digital systems specifically designed to provide Public Safety mission-critical communications.

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
- Scalable and flexible for efficient and cost-effective network design
- P25 Simulcast operation supported to create wide area networks
- Improved worker safety and efficiency with flexible voice and data management
- Efficient infrastructure scalability based on IP network connectivity to P25 RFSS and site controller equipment
- Robust design provides multiples levels of redundancy for reliable communications
- P25 Standard compliance enables interoperability, greater choice of partner solutions and network expansion capabilities
- Customization possible for fulfilling particular use cases
- Encryption ensures secure communications
- Reporting of general statistics for visibility of system health
- Multi-layer architecture for improved performance
- Integrated into a Tait data management services
- Remote management for greater operation efficiency
FEATURES AND BENEFITS

The heart of a Tait P25 trunked network

A complete Tait P25 trunked communications system includes mobile/portable radios, base station/repeaters, and a trunked core network. It is designed, built, and tested by Tait to the highest standards for quality.

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

For additional features beyond the P25 standard and network solution applications, a Tait single-sourced provider improves possible network synergies and also provides one point of contact for enhanced global Services.

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, allowing 2 TDMA traffic channels on a 12.5KHz channel
- 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:

- The Tait TN9400 supports P25 Phase 1 and Phase 2 intra WACN/System ID between RFSS
- It also supports P25 Phase 1 and Phase 2 CSSI (Console Subsystem Interface) for connections 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) and/or site controller redundancies
- Equipment redundancies are at its utmost when using the high level server with dual power supply and RAID option
- Isolated site operation with failsoft repeaters
- Highly available server clusters are constantly mirrored and will change in less than a minute 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 interfaces allow 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
- 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, 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 to enable application data to be sent over the system
- Short Messages (text messaging)
- Unit Monitor
- Confirmed Group Calls
## RF Systems Supported

<table>
<thead>
<tr>
<th></th>
<th>Phase 1</th>
<th>Phase 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simulcast</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Rx voting</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

## Interfaces

<table>
<thead>
<tr>
<th></th>
<th>Phase 1</th>
<th>Phase 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSSI</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>PSTN</td>
<td>Yes</td>
<td>(*)</td>
</tr>
<tr>
<td>Intra-ISSI (RFSS with same WACN/SystemID)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Inter-ISSI (RFSS with different WACN/SystemID)</td>
<td>(*)</td>
<td>(*)</td>
</tr>
</tbody>
</table>

## Subscriber Management

<table>
<thead>
<tr>
<th></th>
<th>Phase 1</th>
<th>Phase 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add/remove single subscriber</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Add/remove multiple subscribers</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Customize call type permissions</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Add/remove multiple talk groups</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Add an announcement call group</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Add a system call group</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

## RFSS

<table>
<thead>
<tr>
<th></th>
<th>Phase 1</th>
<th>Phase 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transmission trunking + quasi message trunking</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Subscriber unit (re-)affiliation with talk group</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Subscriber unit registration/deregistration</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Group call</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Talk group ID</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Group call late entry</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Announcement group call</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Encrypted group call</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Emergency group call</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Call queuing</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Call priority</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Unit-to-unit call</td>
<td>Yes</td>
<td>(*)</td>
</tr>
<tr>
<td>Priority talk group scanning</td>
<td>Yes</td>
<td>(*)</td>
</tr>
<tr>
<td>Data calls</td>
<td>Yes</td>
<td>(*)</td>
</tr>
</tbody>
</table>

### Supplementary services on the control channel:
- Call alert: Yes
- Short message: Yes
- Radio check: Yes

## PSTN Gateway

<table>
<thead>
<tr>
<th></th>
<th>Phase 1</th>
<th>Phase 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit to PSTN call</td>
<td>Yes</td>
<td>(*)</td>
</tr>
<tr>
<td>PSTN to unit call</td>
<td>Yes</td>
<td>(*)</td>
</tr>
<tr>
<td>PSTN to group call</td>
<td>Yes</td>
<td>(*)</td>
</tr>
</tbody>
</table>

## Fault Tolerance

<table>
<thead>
<tr>
<th></th>
<th>Phase 1</th>
<th>Phase 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>High availability failover from primary to secondary server (hardware failure)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>High availability failover from primary to secondary server (network failure)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>High availability failover from primary to secondary server (software failure)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Disaster recovery node handover - manual activation</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Isolated site (network failure): Switch to single site trunking at that site</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Backup control channel (base station failure): Control channel allocated to a different base station</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

## CSSI

<table>
<thead>
<tr>
<th></th>
<th>Phase 1</th>
<th>Phase 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group call</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Unit to unit call initiate</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Unit-to-unit call receive</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Emergency group call</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

(*) Please ask your Tait representative for this feature availability

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**GENERAL**

**Features**

- **Non-voice calls:** All standardized P25 supplementary services – status, radio check, monitor, inhibit/uninhibit
- **Channel frequencies:** Channel addressing supports the use of non-continuous frequency allocations
- **Number of sites:** Supports up to 28 physical sites distributed over up to 20 logical sites
- **Supported servers:**
  - High level (Kontron: CG2300), Mid level (Dell R230), Low level (Sintrone)
- **Environmental specification of server:** +50°F to +95°F (+10°C to +35°C) operation
- **Number of talk groups:** 600
- **Number of radios supported and registered:** 10,000
- **Encryption support:** Passes encrypted transmission AES, DES
- **Talk group scanning:** Supported
- **Interfaces supported:** CSS, intra-SSI, Trunked Analog Gateway (TAG)
- **Tait Partner Console and Voice Recorder:** Supported
- **Monitoring protocols:** SNMP
- **Redundancy:** RFSS site
- **Late entry to group calls:** Supported
- **Queued calls:** Supported

**Features per mode**

- **Phase 1:**
  - **Voice call types:** Group, individual, all call, broadcast, emergency, PSTN
  - **Modes of operation:** P25 Phase 1, P25 Phase 1 trunked simulcast, P25 Phase 1 trunked LMS
  - **Channels per site:** 23 traffic channels, plus control channel
  - **Tait Repeaters supported:** P25 TB9400 recommended (or P25 TB9100 and P25 TB7100)
  - **PSTN:** Supported (PSTN passed)
  - **P25 CAP tested:** Passed

- **Phase 2:**
  - **Group, all call, broadcast, emergency, inter-site, console pre-emption of Phase 2**
  - **P25 Phase 2 trunked, P25 Phase 2 simulcast**
  - **12 traffic channels, with P25 Phase 1 control channel**
  - **P25 TB9400**
  - **n/a**
  - **Phase 2 standard**

* Server equipment options are dependent on system dimensioning
** Please see our P25 trunked Tait Partner solutions portfolio

**CAPACITY**

**SYSTEM TYPE:**

**PLATFORM:**

<table>
<thead>
<tr>
<th><strong>Server Type</strong></th>
<th><strong>RFSS Controller</strong></th>
<th><strong>Site Controller</strong></th>
<th><strong>RFSS</strong></th>
<th><strong>Express6</strong></th>
<th><strong>Access</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High Availability supported</strong></td>
<td>High/Mid Optional 1</td>
<td>High/Mid/Low Optional 1</td>
<td>High/Mid/Low Mandatory 1</td>
<td>High/Mid/Low Mandatory 1</td>
<td>High/Mid/Low Mandatory 1</td>
</tr>
<tr>
<td><strong>Quantity per Network</strong></td>
<td>4 (Intra-SSI)</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**General capacity for all system types**

- **Physical Channels per Site:** P25 Phase 2: 12 traffic channel +1 control channel
  - P25 Phase 1: 23 traffic channel +1 control channel

- **Concurrent Audio Connections per Network:** High: 320; Mid: 250; Low: 250

- **Number of base stations supported:** Unlimited

1 First site controller is hosted on the RFSS server
2 No system imposed limit on number of sites or total base stations, within the maximum concurrent audio connections

NOTE: High, Kontron, Mid, Dell, Low, Sintrone

Tait has taken every care in compiling this specification sheet, but we're always innovating and therefore changes to our models, designs, technical specification, visuals and other information included in this specification sheet could occur. For the most up-to-date information and for a copy of our terms and conditions please visit our website www.taitradio.com.

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Tait International Limited facilities are certified for ISO 9001:2015 (Quality Management System), ISO 14001:2015 (Environmental Management System) and ISO 45001:2018 (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.

Authorized Partners