WinCC V8.0 Architectures

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WinCC V8.0
Symbol explanations

WinCC single system	WinCC Engineering
WinCC Server	PC without WinCC
WinCC UNI-Clients (Standard-Client)	WinCC Unified Panel
WinCC Multi-Client	Unified PC RT System
WinCC WebUX Client	S7 system components
WinCC WebNavigator Client	External database e.g.: SQL, Oracle, Access — Ext
	license needed on the computer 1 2 3

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"
This set of slides provides an overview of common system architectures for WinCC V8 and which licenses are required on the participating WinCC stations.

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WinCC V8.0 Scalability
Configuration principle and function tasks

Summery quantity structure – Following configurations were tested as typical scenarios

	Quantity	Comment
WinCC Server-Server communication	**18 Servers**	Connection to a multi-user system with MULIT-Clients has not been approved • One server can access the data from up to 17 other servers or redundant pairs of servers • The server accessing the data behaves as a client in respect of the configuration and operation, except that a standard server cannot be configured
WinCC Server or redundant Server pairs	**18 Servers**	Access to a maximum of **18 WinCC servers** or redundant server pairs from WinCC MULTI-Clients
WinCC UNI-Clients (without their own project)	**64 Clients**	**Maximum of 64 WinCC UNI-Client's** interconnect to one Server. Redundant server pairs are possible
WinCC MULTI-Clients (with their own project)	**50 Clients**	**Maximum of 50 WinCC MULTI-Clients** in the WinCC distributed system. A maximum of 36 servers in the form of 18 redundant server pairs is possible
WinCC WebNavigator-Clients	**150 Clients**	
WinCC WebUX-Clients	**100 Clients**	As a typical scenario, we tested the simultaneous access of **100 WebUX-Clients** to one WebUX server • 100 clients are not a "hard" system limit – it is technically possible to connect more than 100 clients simultaneously • The performance depends on the employed hardware and the volume of process data

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WinCC V8.0 S7- process communication
SIMATIC NET Licenses

**SIMATIC NET V18 license is required, if more than 8 x S7-connections are established.**

SIMATIC NET Licenses	Number of supported connections
SOFTNET-IE S7 V18 *	up to 64 connections
SOFTNET-IE S7 Extended V18 *	up to 64 Connections (S7 -300/400) + 128 Connections (S7-1500) + 128 Connections (S7-1200)
HARDNET-IE S7 V18 ** **up to 120 connections (system tested)**	

* The SOFTNET-IE S7 license is used for communication via **network card.**
** The HARDNET-IE S7 license is used for communication via Industrial Ethernet CP (especially CP 1623).

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Single-user station
Monitoring & Operating from a single PC
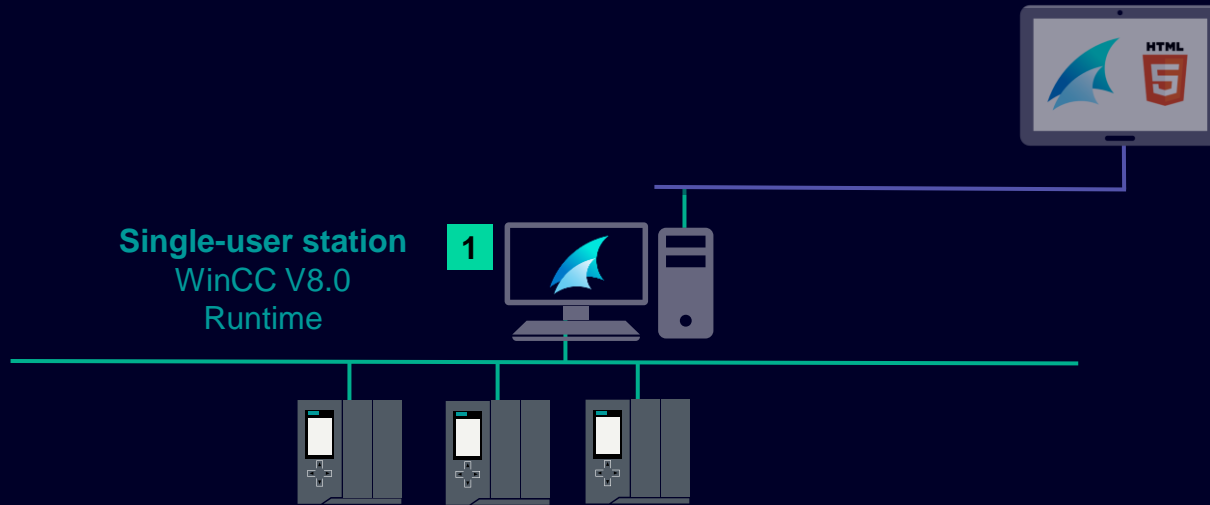
Single-user station **1**
WinCC V8.0
Runtime

1. WinCC RT (Runtime)

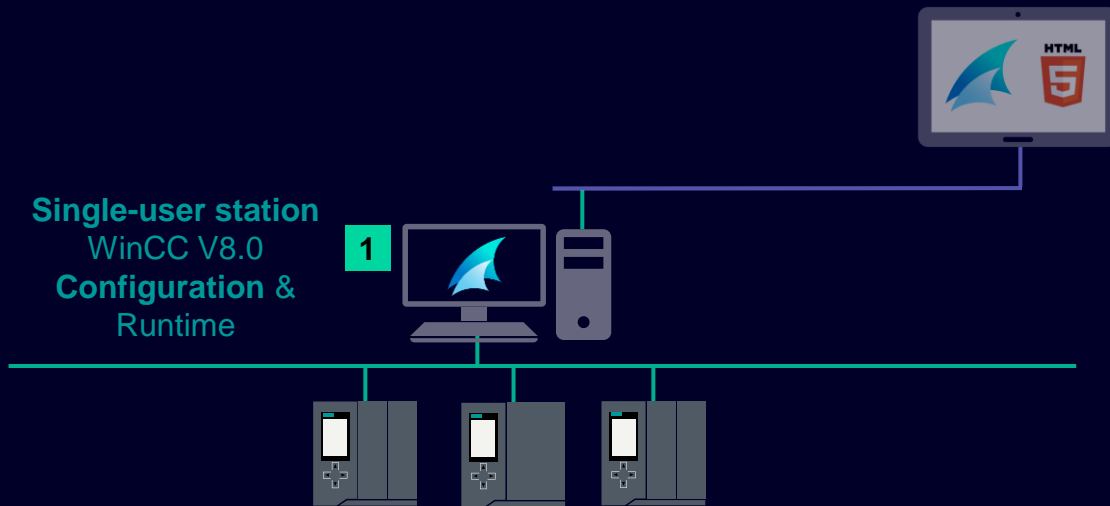## Additional Information

- External Tags defined by size of license, unlimited number of internal tags are included in every RT/RC license
- base license already includes 512 archiving variables
- WebUX monitor license included in every RT/RC license

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Single-user station with Engineering
Monitoring & Operating from a single PC

Single-user station
WinCC V8.0
Configuration &
Runtime

1

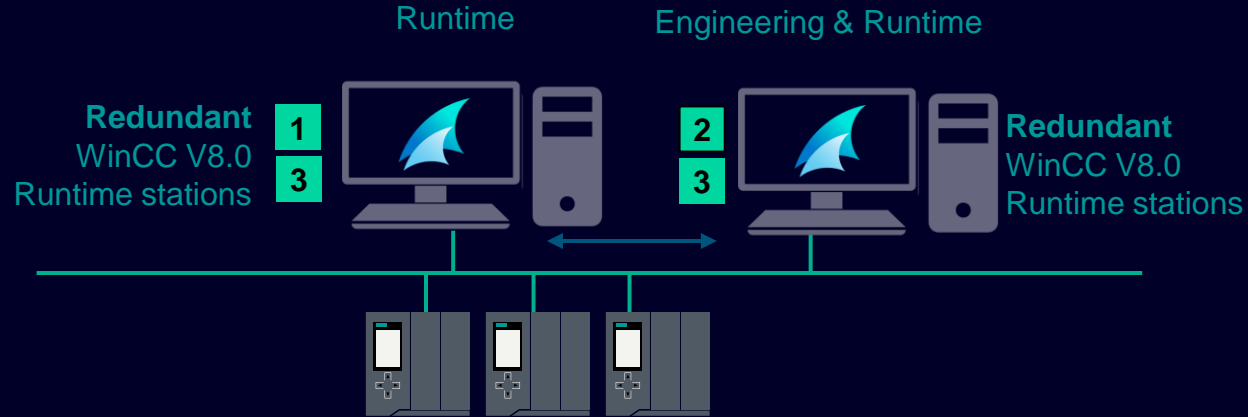## 1. WinCC RC (Runtime & Configuration)

Additional Information

- External Tags defined by size of license, unlimited number of internal tags are included in every RT/RC license
- **Engineering and Runtime on the same PC**
- base license already includes 512 archiving variables
- WebUX monitor license included in every RT/RC license

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Redundant engineering single-user stations

Runtime   Engineering & Runtime

Redundant `1` **Redundant**
WinCC V8.0 `3` `2` WinCC V8.0
Runtime stations `3` Runtime stations

1. **WinCC RT (Runtime)**

2. **WinCC RC (Runtime & Engineering)**

3. **WinCC Redundancy**
   (Package contains two licenses)

Additional Information

Both stations work in parallel (both are connected to the process). In case of a breakdown of one of WinCC stations, the other takes over the archiving of messages, process Data and user archive data (Recipe).
Automatic synchronization of all archives after resumption of normal operation
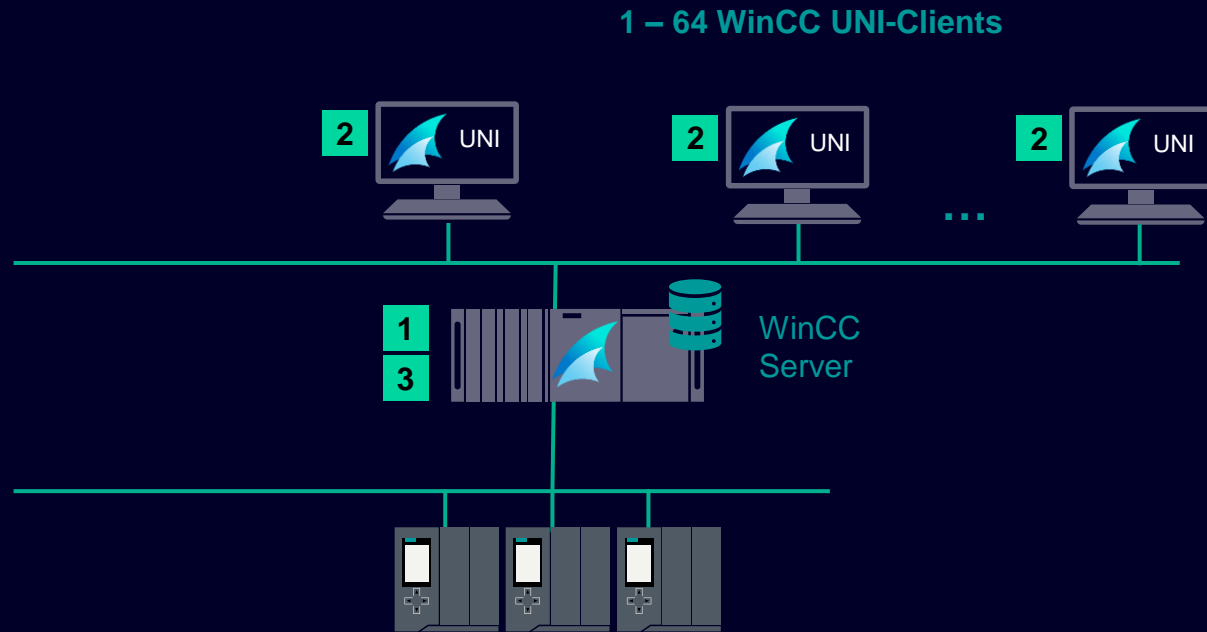Redundancy package includes two licenses

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Multi-user scenarios
Central server with several operator stations – UNI-Client (Standard-client)

1 – 64 WinCC UNI-Clients

1. **WinCC RT (Runtime)**

2. **WinCC RT - Client**

3. **WinCC Server**

Please note

A Standard-Client has **no WinCC project** and is connected to one specific server from which he retrieves data and screens.
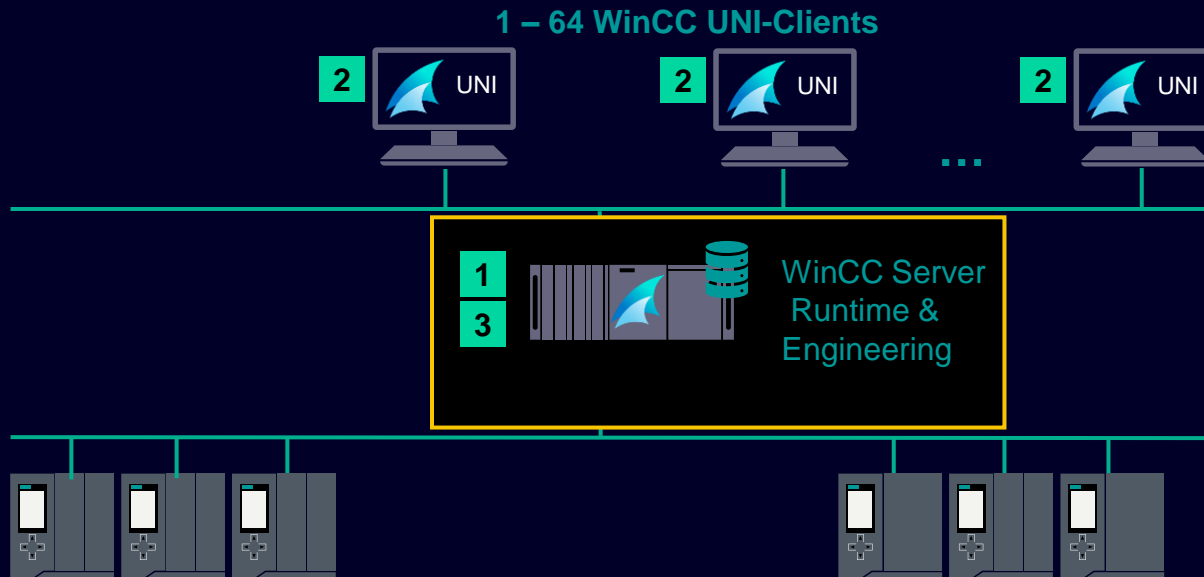**Maximum of 64 WinCC UNI-Client's** interconnect to one Server.
Redundant server pairs are possible

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Multi-user stations with Engineering on the server

1 – 64 WinCC UNI-Clients

WinCC Server
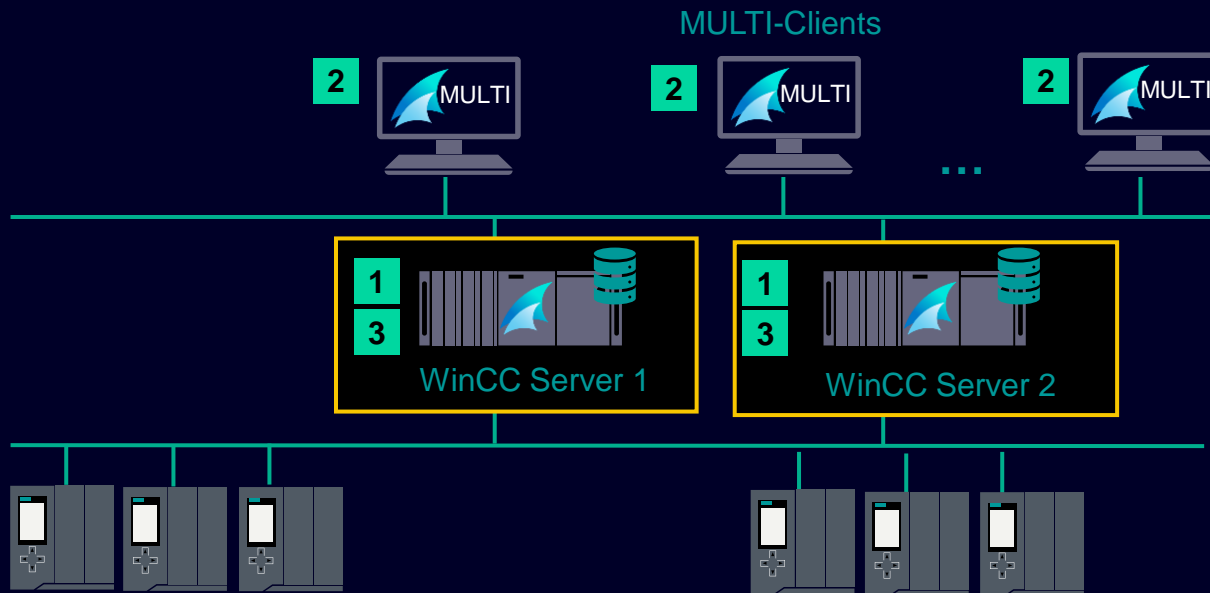Runtime &
Engineering

Please note:

The Engineering & Runtime license (RC) is needed on the server if it is used for runtime and for local engineering.

1. **WinCC RC (Runtime & Configuration)**

2. **WinCC RT - Client**

3. **WinCC Server**

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Multi-user stations with multi-clients
Clients with their own projects

MULTI-Clients

1. **WinCC RT (Runtime)**

2. **WinCC RT - Client**

3. **WinCC Server**

Please note:

A MULTI-Client can connect to several servers ,from which he retrieves tags, alarms and screens.
One MULTI-Client can connect to max. 18 servers (servers can be redundant) at the same time.
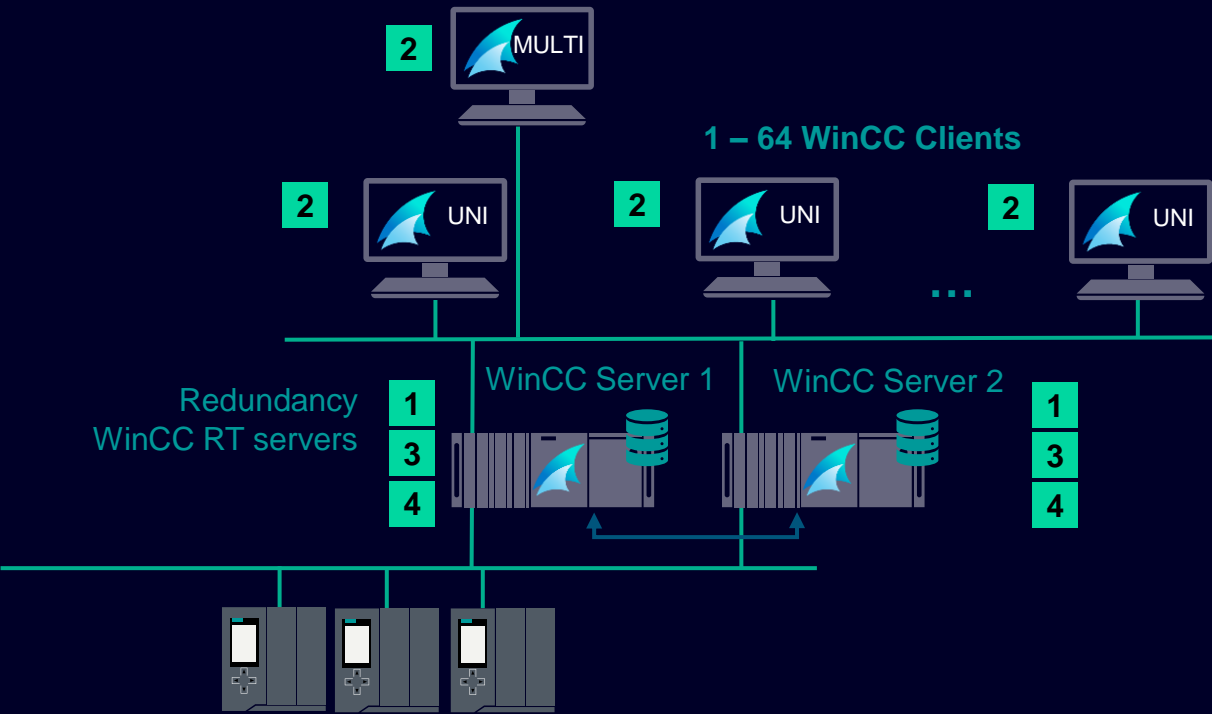One WinCC Server can serv up to 50 MULTI-Clients.

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Multi-Client stations/Server with Redundancy
High availability

2 MULTI

1 – 64 WinCC Clients

2 UNI **2** UNI **2** UNI

...

Redundancy
WinCC RT servers

WinCC Server 1   WinCC Server 2

1 **3** **4**

1 **3** **4**

1. **WinCC RT (Runtime)**

2. **WinCC RT - Client**

3. **WinCC Server**

4. **WinCC Redundancy**
   (Package contains two licenses)

Please note

Due to the redundancy of the servers, the Clients can continue to work in case of a server fails.
The data is synchronized across the servers and the database is entirely replicated when operations return to normal.

End customer scenario
Engineering done by System integrator
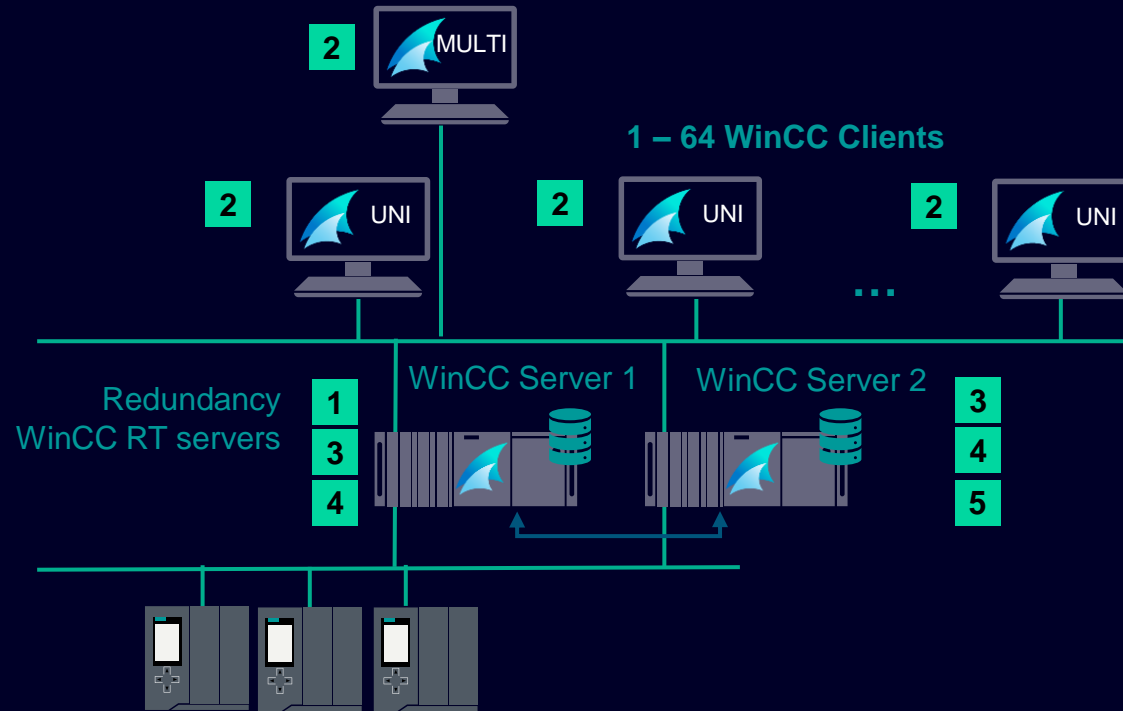
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Multi-Client stations/Server with Redundancy
High availability

1 – 64 WinCC Clients

Redundancy WinCC RT servers

WinCC Server 1   WinCC Server 2

1. **WinCC RT (Runtime)**

2. **WinCC RT - Client**

3. **WinCC Server**

4. **WinCC Redundancy**
   (Package contains two licenses)

5. **WinCC RC (Runtime & Configuration)**

Engineering done on one of the servers
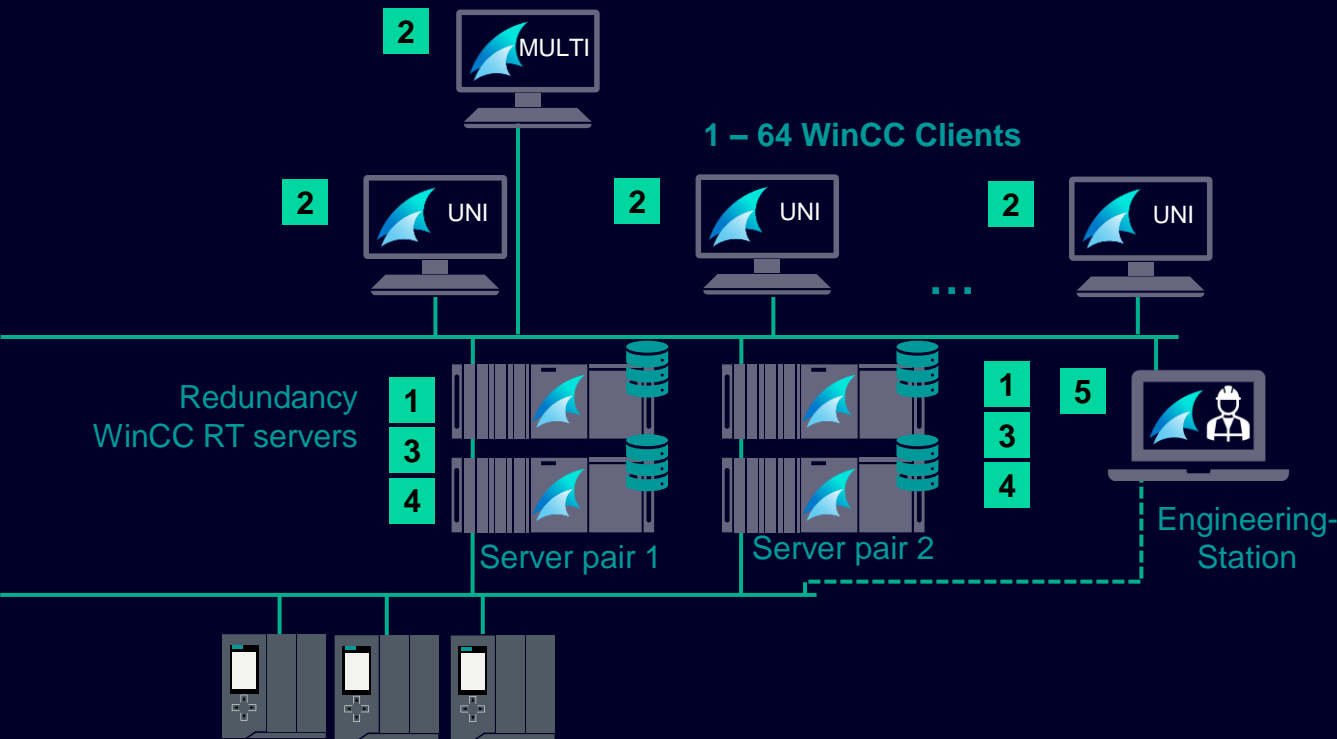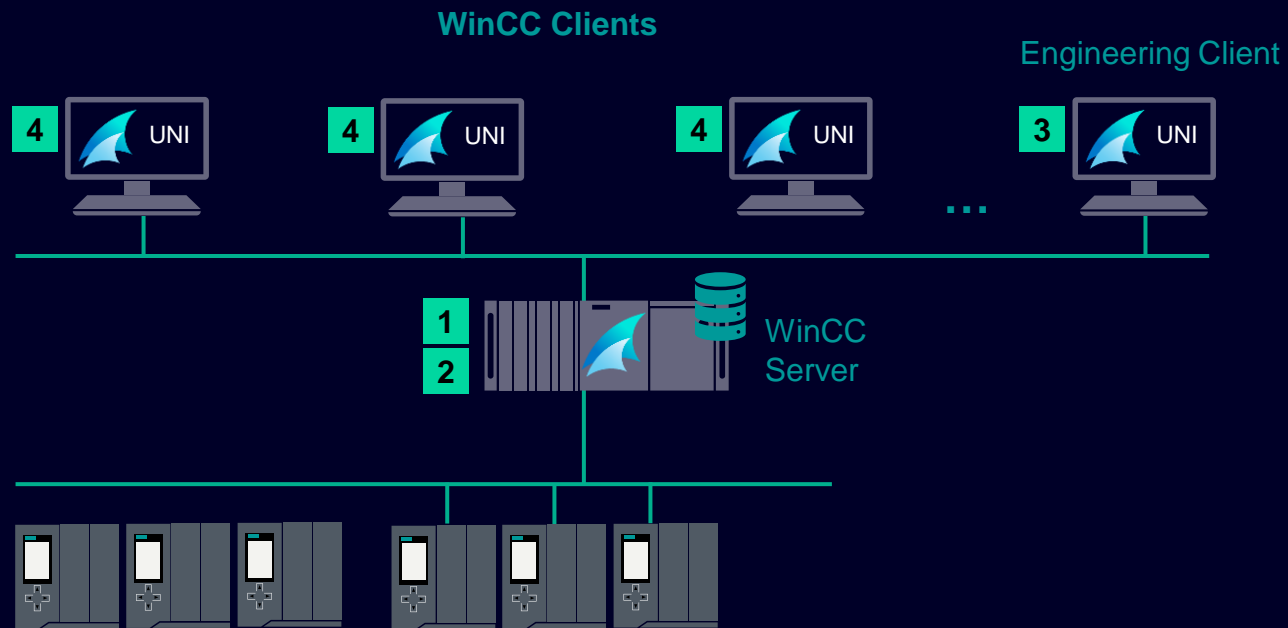Project distributed via WinCC Project Duplicator

Please note
Due to the redundancy of the servers, the Clients can continue to work in case of a server fails.
The data is synchronized across the servers and the database is entirely replicated when operations return to normal.

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Multi-Client stations/Server with Redundancy
High availability

2 MULTI

1 – 64 WinCC Clients

2 UNI   **2** UNI   **2** UNI

Redundancy
WinCC RT servers **1** **3** **4**   **1** **3** **4**   **5**

Server pair 1   Server pair 2   Engineering-Station

1. **WinCC RT (Runtime)**

2. **WinCC RT - Client**

3. **WinCC Server**

4. **WinCC Redundancy**
(Package contains two licenses)

5. **WinCC RC (Runtime & Configuration)**

Engineering done on dedicated
Engineering Stations
Project distributed via SIMATIC
Manager to all Servers

Please note
Due to the redundancy of the servers, the Clients can continue to work in case of a server fails.
The data is synchronized across the servers and the database is entirely replicated when operations return to normal.

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Multi-user stations with Engineering from an Engineering Client

WinCC Clients

Engineering Client

4	UNI
4	UNI
4	UNI
3	UNI

...

| 1 | |
| 2 | |

WinCC Server

1. **WinCC RT (Runtime)**

2. **WinCC Server**
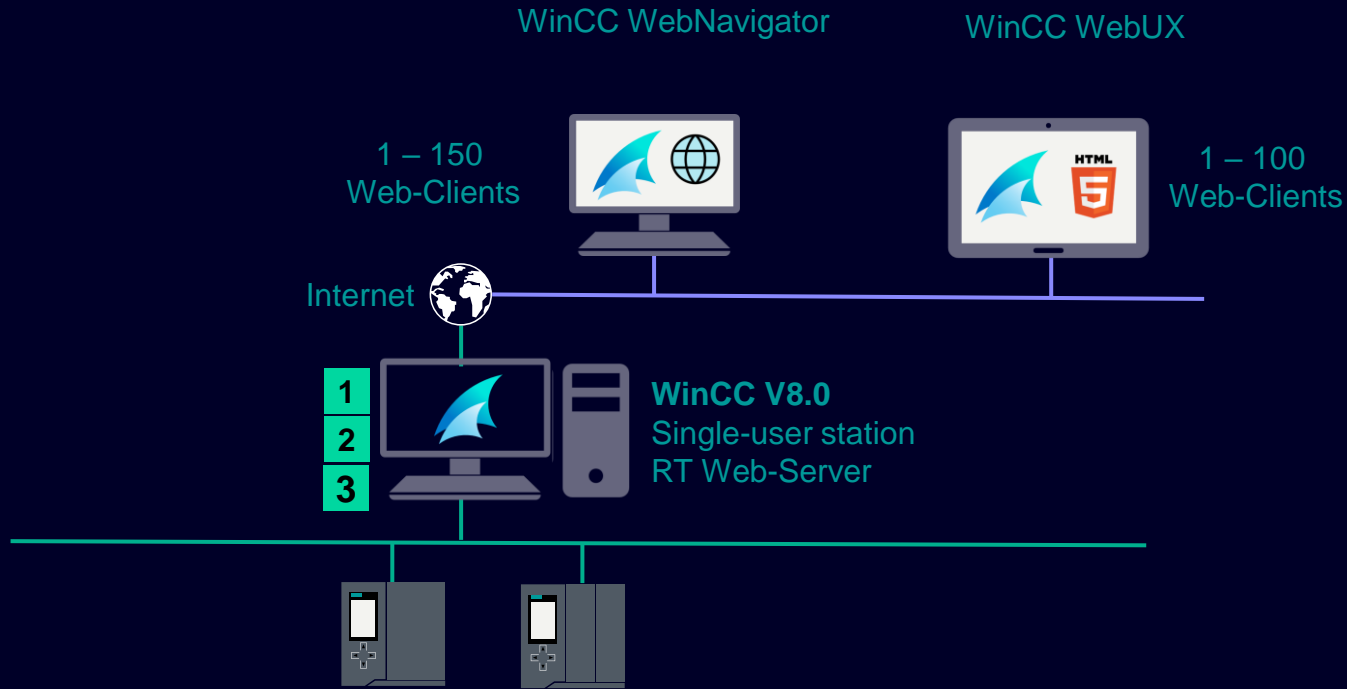
3. **WinCC RC-Client**

4. **WinCC RT-Client**

Please note

A WinCC client with RC Client license can be used as a Remote Engineering Client opening the project on the WinCC Server who can have any RT license.

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Single-user station Web-server
Remote monitoring/operation stations and display and analysis for Web-client

WinCC WebNavigator

WinCC WebUX

1 – 150
Web-Clients

1 – 100
Web-Clients

Internet

1
2
3

WinCC V8.0
Single-user station
RT Web-Server

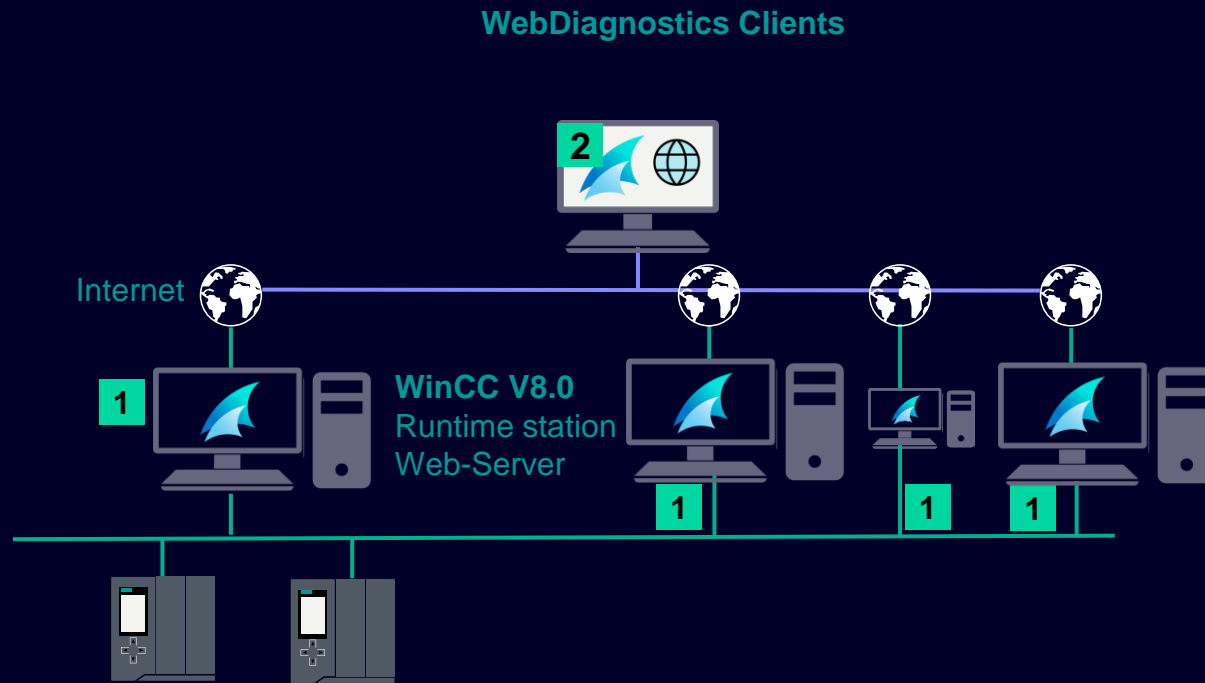1. **WinCC RT (Runtime)**

2. **WinCC WebNavigator***

3. **WinCC WebUX***

*Web-licenses per connection on the server
> High flexibility

WinCC can host both Web Servers at the same time, on the same machine

Additional Information

WinCC/WebNavigator
for Web-Clients which run under a Windows operating system 1-150 Webclients (use "App"WinCC Viewer RT)

WinCC/WebUX
for Web-Clients which run under a HTML 5 Browser 1-100 Webclients

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Single-user station Web-server
Remote monitoring/operation stations and display and analysis for Web-client

WebDiagnostics Clients

2

Internet
1

WinCC V8.0
Runtime station
Web-Server

1

1   **1**

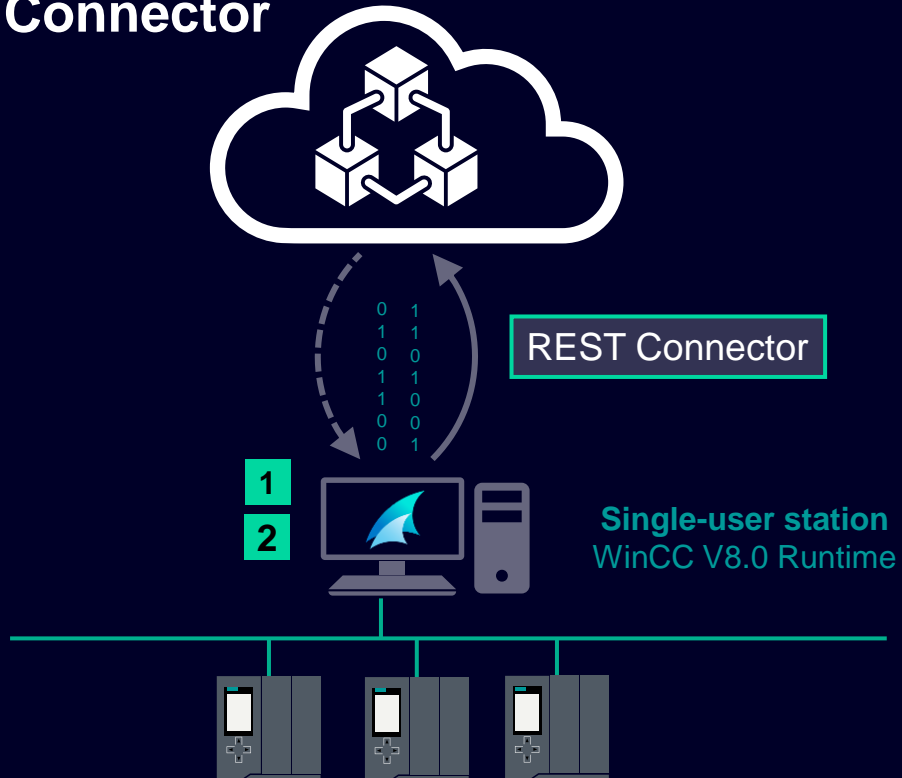1. **WinCC RT (Runtime)**

2. **WinCC WebDiagnostic Client**

Additional Information

- WebNavigator Server is running and configured on the WinCC Runtime Stations.
- WebDiagnostic client has its license locally on the client and can connect to each of the Webservers individually.
- This is only available for WebNavigator.

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WinCC V8.0 IT/OT Integration
REST Connector

REST Connector

1
2

Single-user station
WinCC V8.0 Runtime

1. **WinCC RT (Runtime)**

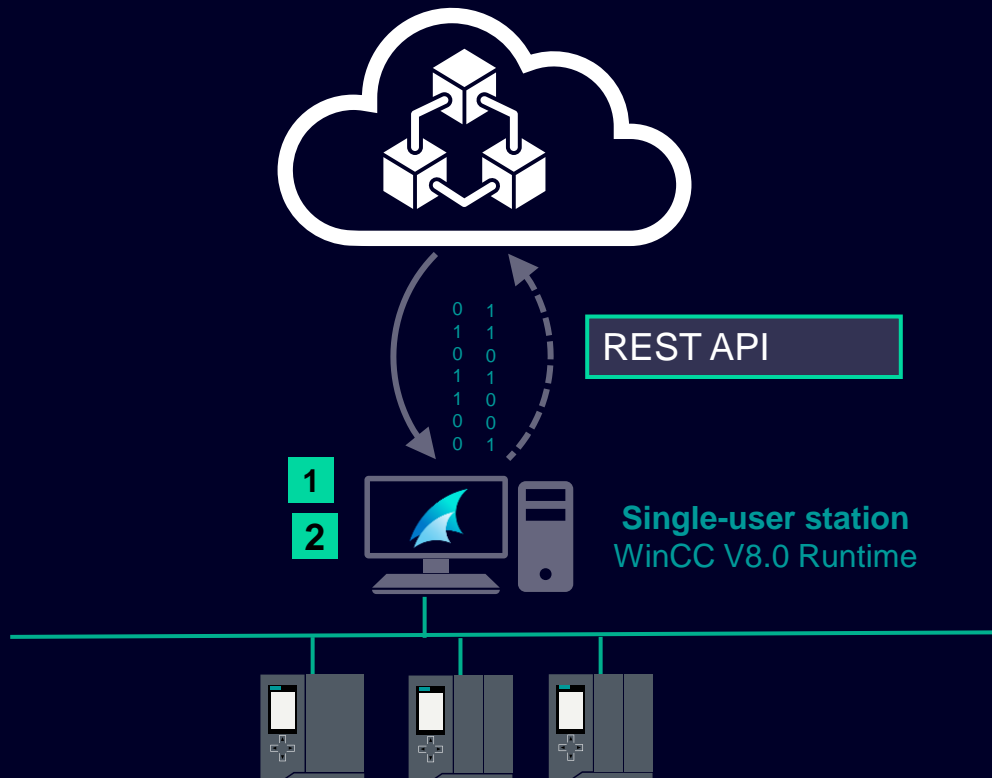2. **WinCC Connectivity Pack or WinCC REST Connect**

Additional Information

- REST Connector post data to external IT-application or get data from them
- Notification based on alarms in WinCC
- Data Exchange based on process value changes or user-defined cycles

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WinCC V8.0 IT/OT Integration
REST API

REST API

1 **2** Single-user station
WinCC V8.0 Runtime

1. **WinCC RT (Runtime)**
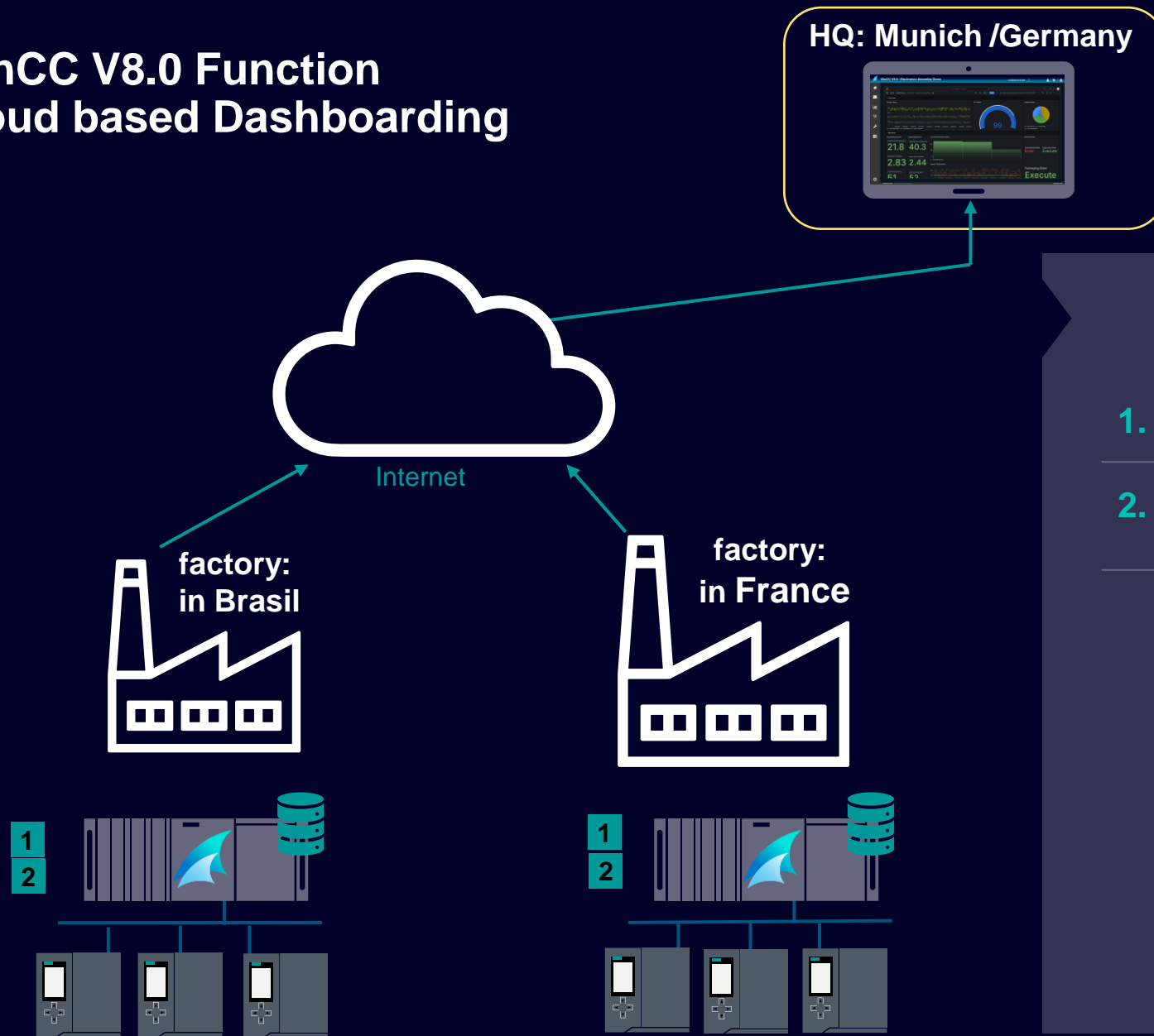
2. **WinCC Connectivity Pack or WinCC REST Connect**

Additional Information

- REST API allows other applications and systems to send REST requests to WinCC to read the configuration data of the tag management or to read/write RT values or Archive tags

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WinCC V8.0 Function
Cloud based Dashboarding

HQ: Munich /Germany

Internet

factory:
in Brasil

factory:
in France

1. **WinCC RT (Runtime)**

2. **WinCC Connectivity Pack or**
   WinCC REST Connect

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WinCC V8.0 User archives
Recipe management and control

WinCC Clients

2 UNI
2 UNI
...
2 UNI

WinCC V8.0 Server
1
3
4
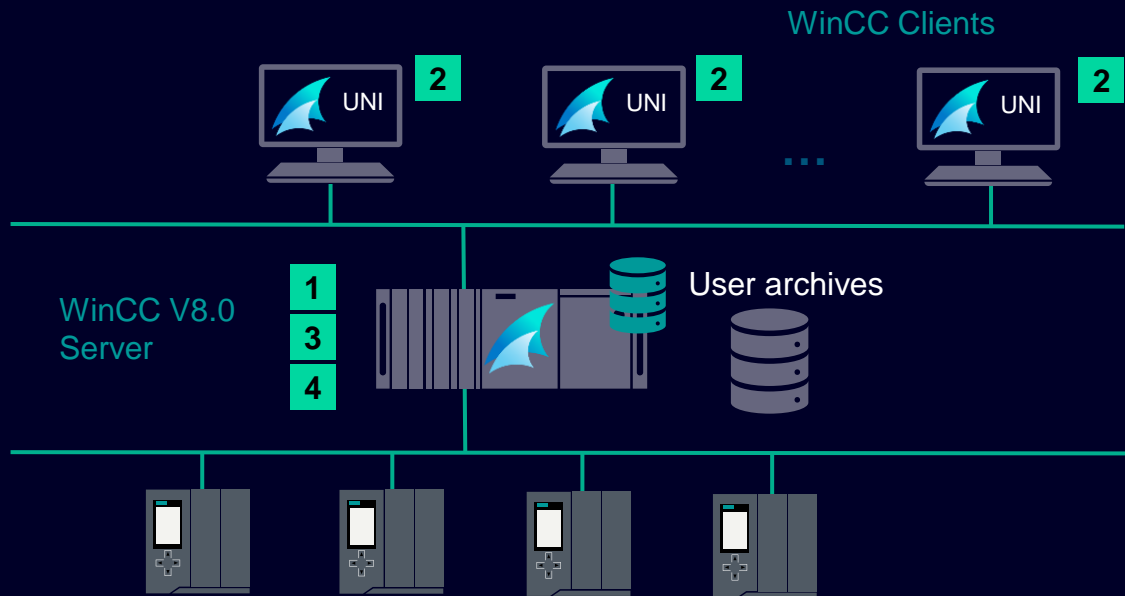
User archives

- WinCC user archives allows a user to manage his archives in the form of tables
- E.g.: Management of recipes – management of batch parameters, etc
- The user archive license is on the server
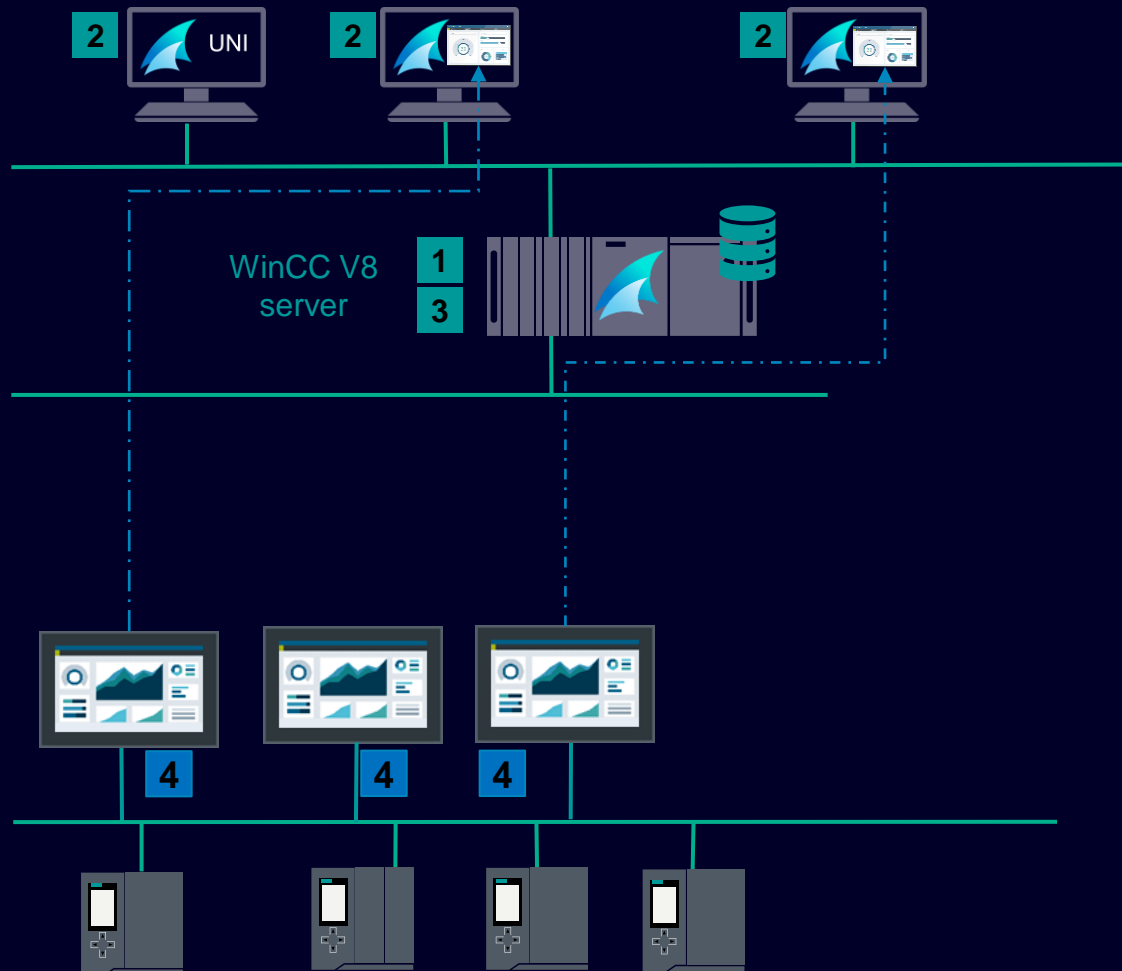- no user archives license is required on client side

1. **WinCC RT (Runtime)**

2. **WinCC Client**

3. **WinCC Server**

4. **WinCC UserArchive**

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WinCC V8: Build a bridge to unified Screen Access

1. **WinCC RT (Runtime)**

2. **WinCC RT-Client**
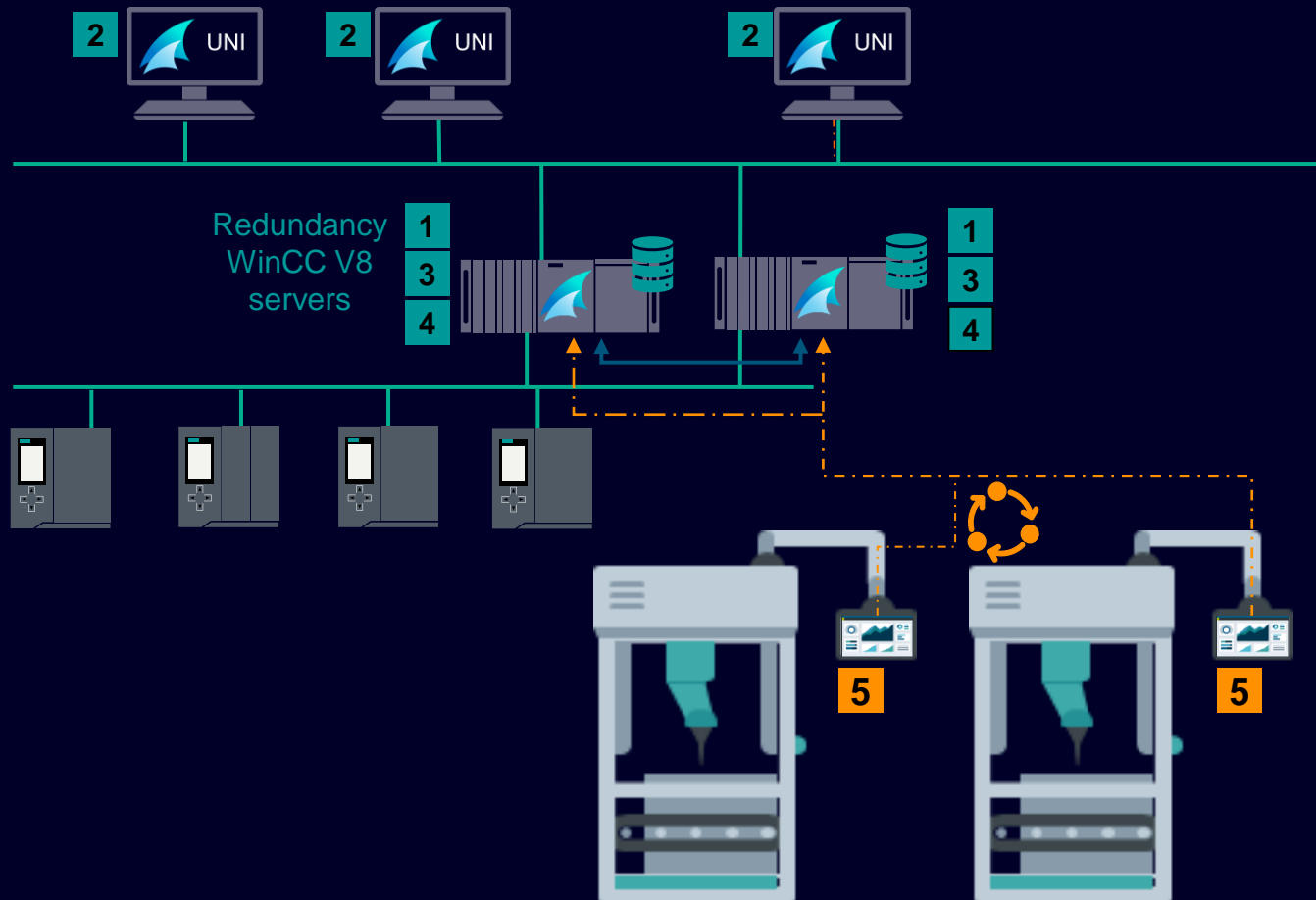
3. **WinCC Server**

4. **WinCC Unified Client Access**

Pictures Access from WinCC V8.0 to WinCC Unified
- Unified Client Operate

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WinCC V8: Build a bridge to unified Tag Collaboration

Redundancy WinCC V8 servers `1` `3` `4`

`1` `3` `4`

1. **WinCC RT (Runtime)**

2. **WinCC RT-Client**
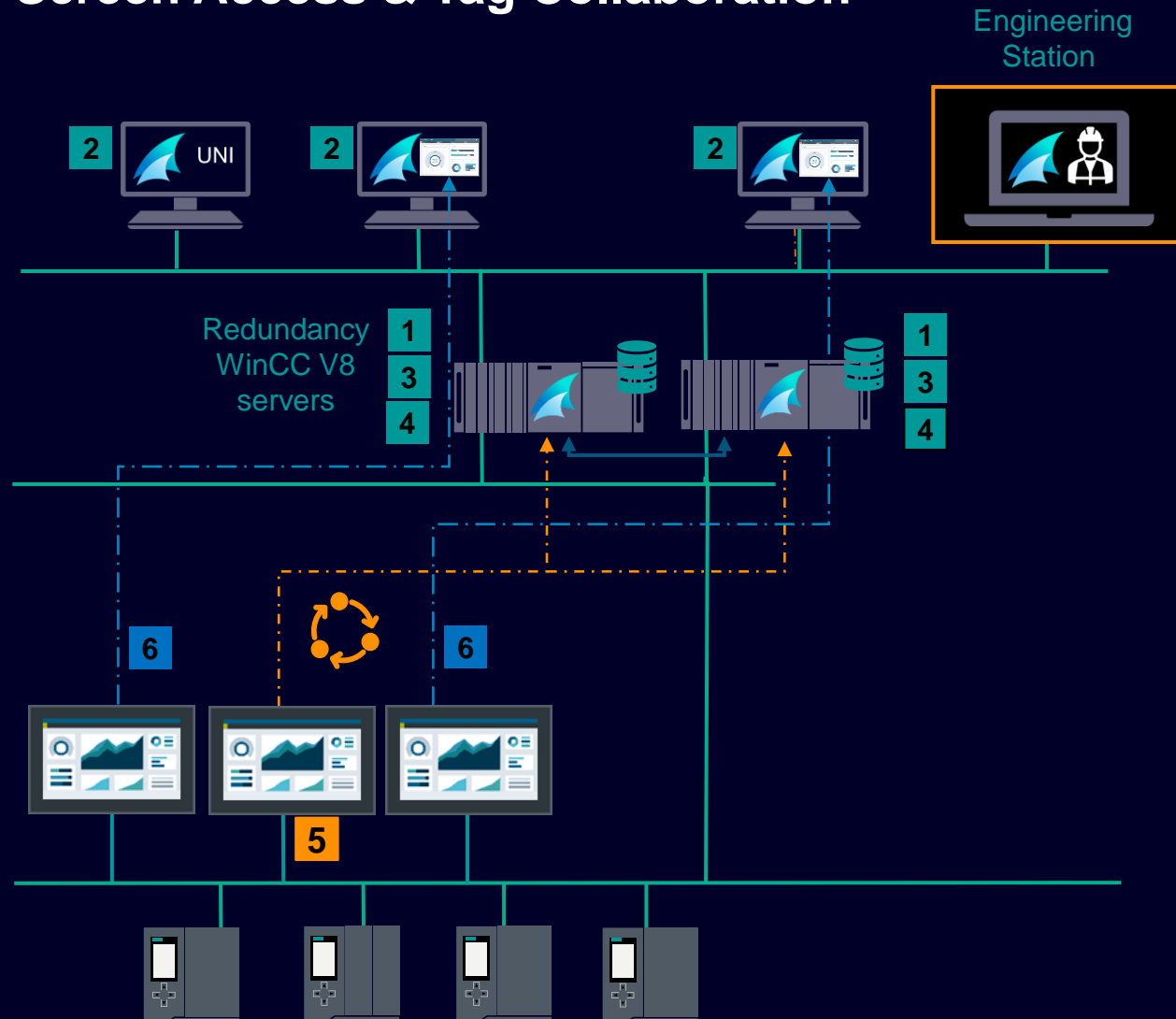
3. **WinCC Server**

4. **WinCC Redundancy**

5. **WinCC Unified Collaboration**

**Tag connection
from Unified to WinCC V8.0**
- Connectivity Pack License
- Unified Collaboration License

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WinCC V8: Build a bridge to unified Screen Access & Tag Collaboration

1. **WinCC RT (Runtime)**
2. **WinCC RT-Client**
3. **WinCC Server**
4. **WinCC Redundancy**
5. **WinCC Unified Collaboration (for Tag access)**
6. **WinCC Unified Client Access (for Screen Integration)**

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WinCC architectures with advanced options will follow in next version

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