Migrating to MultiTenancy

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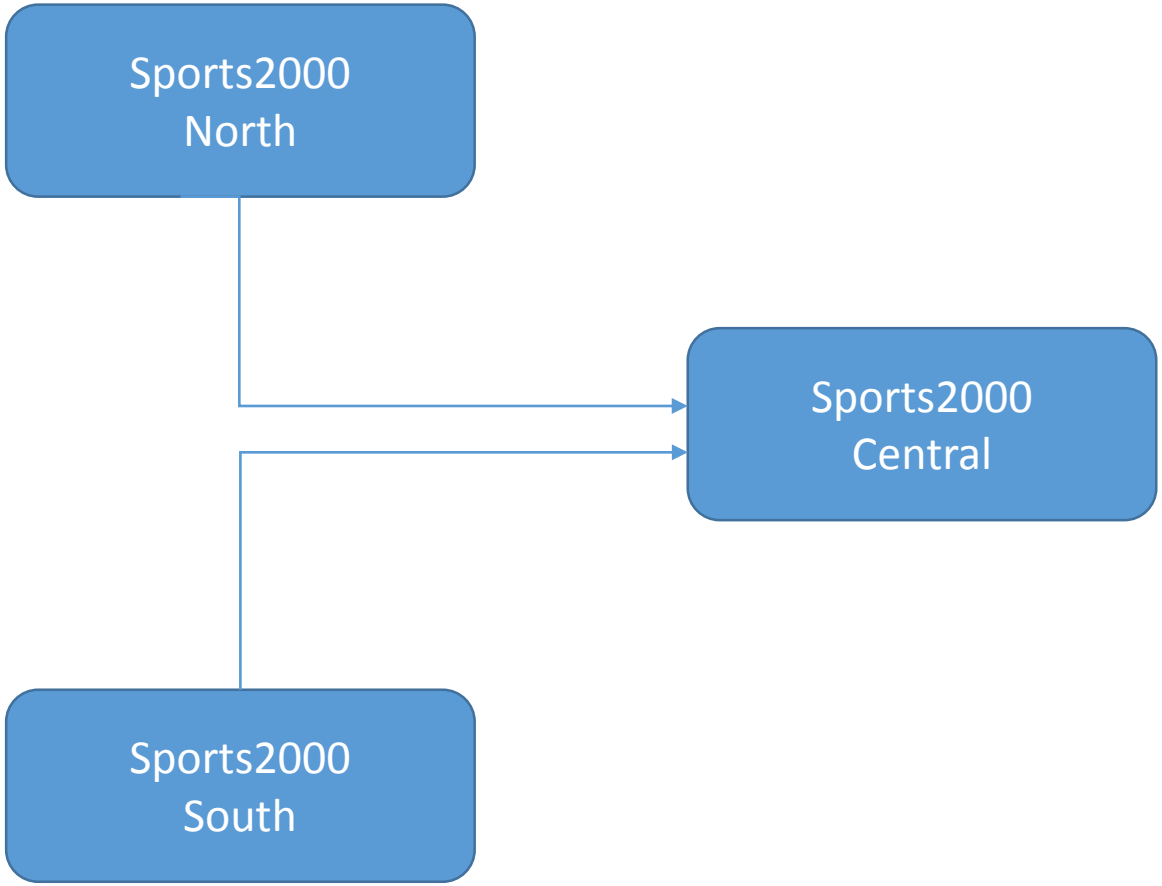
The Assignment – Merge “North” and “South” into one DB



How to make the transition?

Two Options:

- Create a new MT DB
- Convert an existing DB to MT

Convert an existing DB, or Start from Scratch?

Convert an existing DB to MT

- Requires all MT DB objects be in a Type II area
- (default indexes too!)
- Enable tables for MT
- Delete and create sequences for MT
- Create Tenants, Domains, and Users
- Copy tenant's data from default partition to their MT Tenant partition
- Delete default tenant partition data
- Load other tenant's data and sequences
- Configure user login sequence

Convert an existing DB, or Start from Scratch?

Start from Scratch

- Create new db with Type II Areas
- Edit .df to set tables and sequences to be MT
- Load .df
- Create Tenants, Domains, and Users
- Load data and sequences for each MT Tenant
- Configure user login process

Elements needed to make a MT DB:

.st file with all Type II Storage Areas

.df file converted to MT

Convert .st file to Type II storage areas:

Original .st

```
b .
d "Schema Area":6,32;1 .

d "Employee":7,32;1 .
d "Inventory":8,32;1 .
d "Cust_Data":9,32;1 .
d "Cust_Index":10,32;1 .
d "Order":11,32;1 .
d "Misc":12,32;1 .
```


1 block / cluster = Type I area

.st Converted to Type II Areas

```
b .
d "Schema Area":6,32;1 .

d "Employee":7,32;8 .
d "Inventory":8,32;8 .
d "Cust_Data":9,32;8 .
d "Cust_Index":10,32;8 .
d "Order":11,32;8 .
d "Misc":12,32;8 .
```


> 1 block / cluster = Type II Area

Convert DF Table to MT

Before MT

```
ADD TABLE "Family"
  AREA "Employee"
  DUMP-NAME "family"
```

With MT

```
ADD TABLE "Family"
  MULTITENANT yes
  AREA "Employee"
  DUMP-NAME "family"
```

Convert DF Sequence to MT

Before MT

```
ADD SEQUENCE "NextCustNum"
  INITIAL 1000
  INCREMENT 5
  CYCLE-ON-LIMIT no
  MIN-VAL 1000
```

With MT

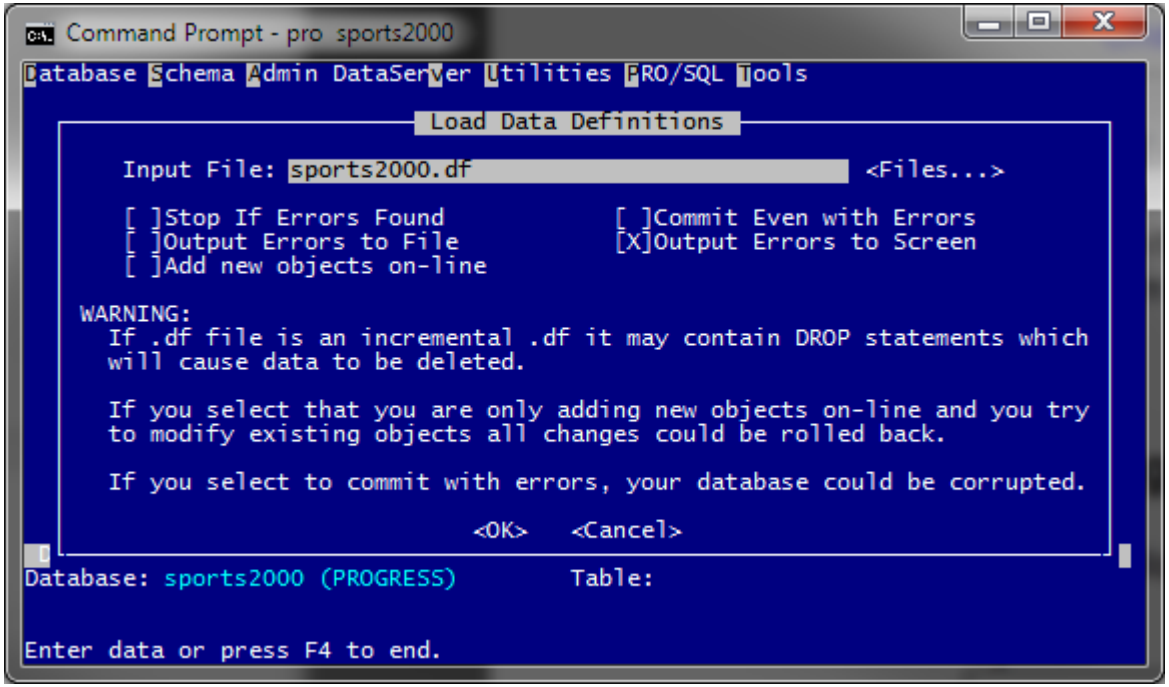
```
ADD SEQUENCE "NextCustNum"
  MULTITENANT yes
  INITIAL 1000
  INCREMENT 5
  CYCLE-ON-LIMIT no
  MIN-VAL 1000
```

Create an empty MT DB

```
D:\MT\central\db\prodb sports2000
Please enter
  demo    to get the system demonstration database, or
  sports  to get the sports demonstration database, or
  isports to get the international sports database, or
  sports2000 to get the sports2000 sample database, or
  empty   to get the system empty database, or
  anyname to get a copy of that database.          : empty
Procopy session begin for tdk on CON:. (451)
Database copied from c:\progress\openedge\11.1\empty. (1365)
Procopy session end. (334)
```

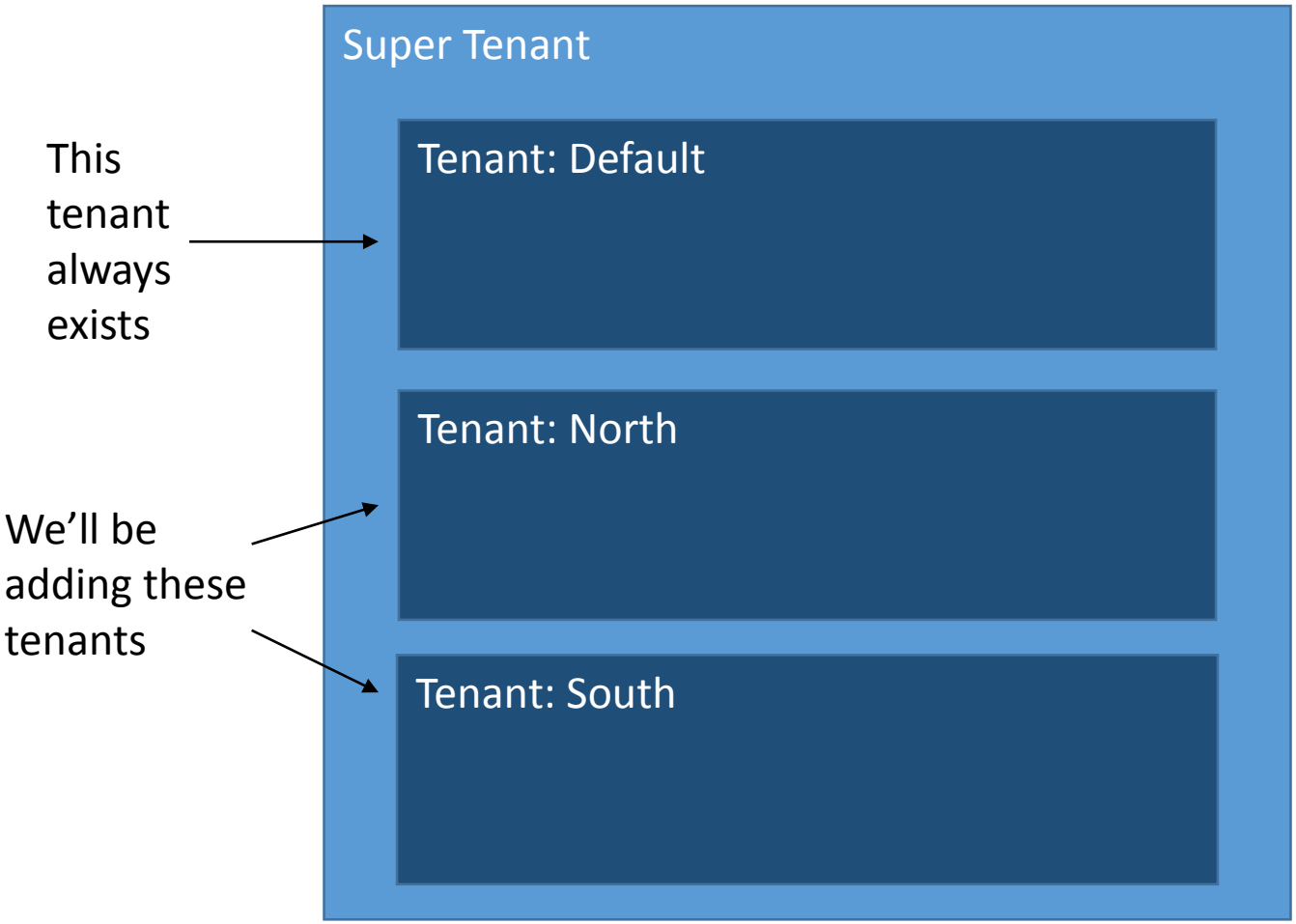
```
D:\MT\central\db\proutil sports2000 -C enableMultitenancy
OpenEdge Release 11.1 as of Fri Jun 15 19:01:20 EDT 2012
Multi-tenant Tables has been successfully enabled. (15900)
```

Load the MT df file



Setting up tenants, domains, and users

Segregation and Visibility of Tenant Data



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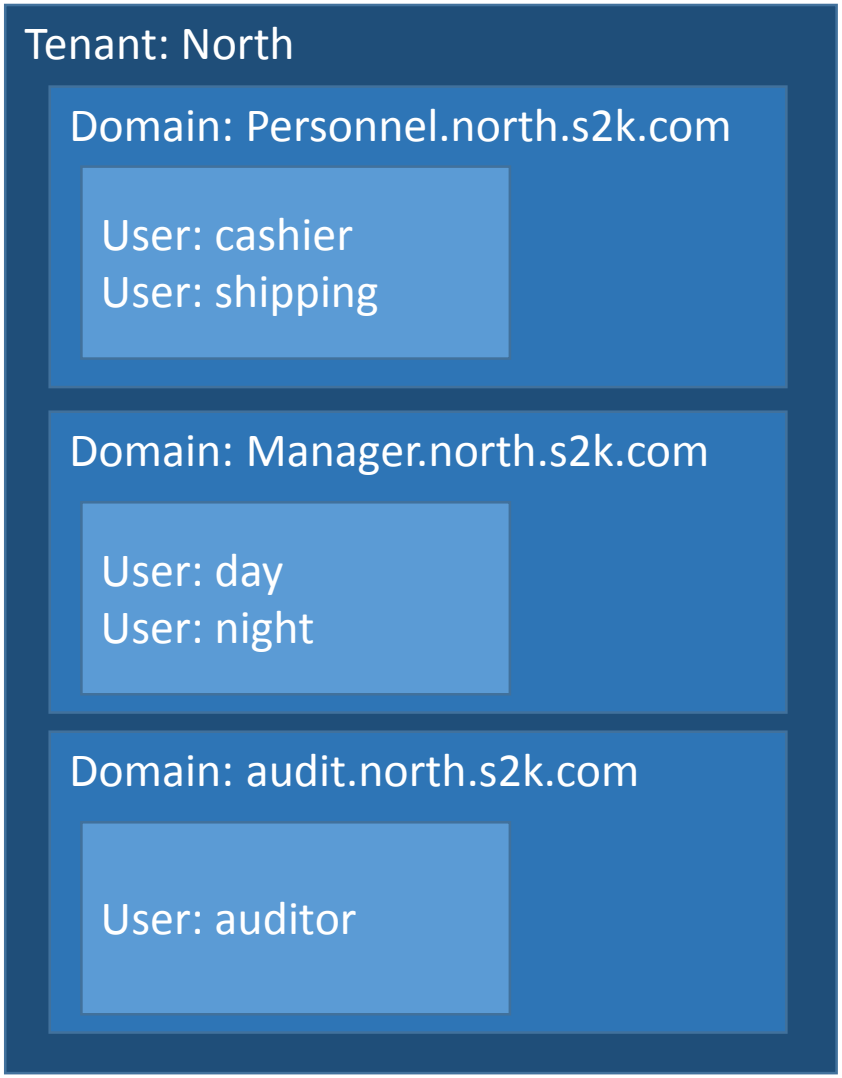
Configure tenants, domains, and users



Who and what goes where

cashier@personnel.north.s2k.com

shipping@personnel.north.s2k.com

day@manager.north.s2k.com

night@manager.north.s2k.com

auditor@audit.north.s2k.com

Setting up tenants, domains, and users – Configuring Tenants

Options for setting up and configuring a (new) tenant:

- Data Admin Tool – Can create / maintain almost everything but tenants
- API – use to automate MT administration (outside scope of this presentation)
- OE Explorer

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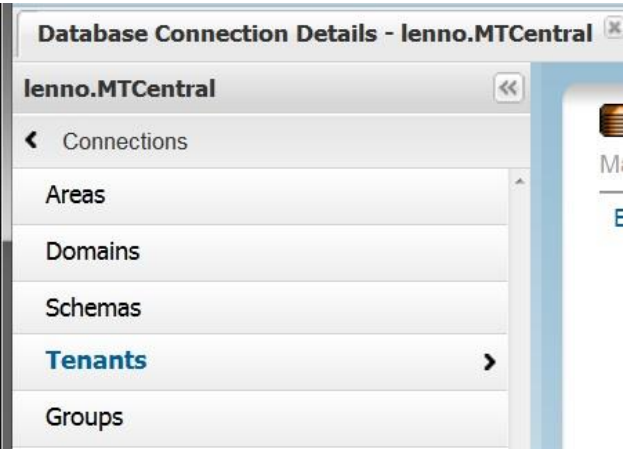
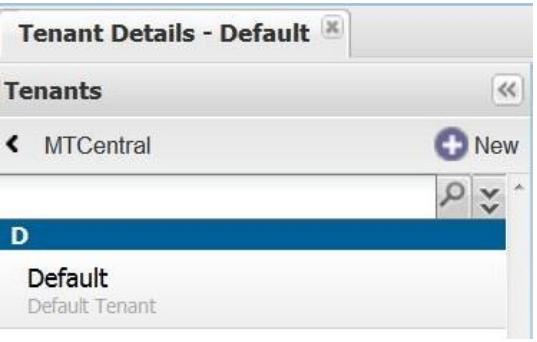
Setting up tenants, domains, and users – Creating Tenants



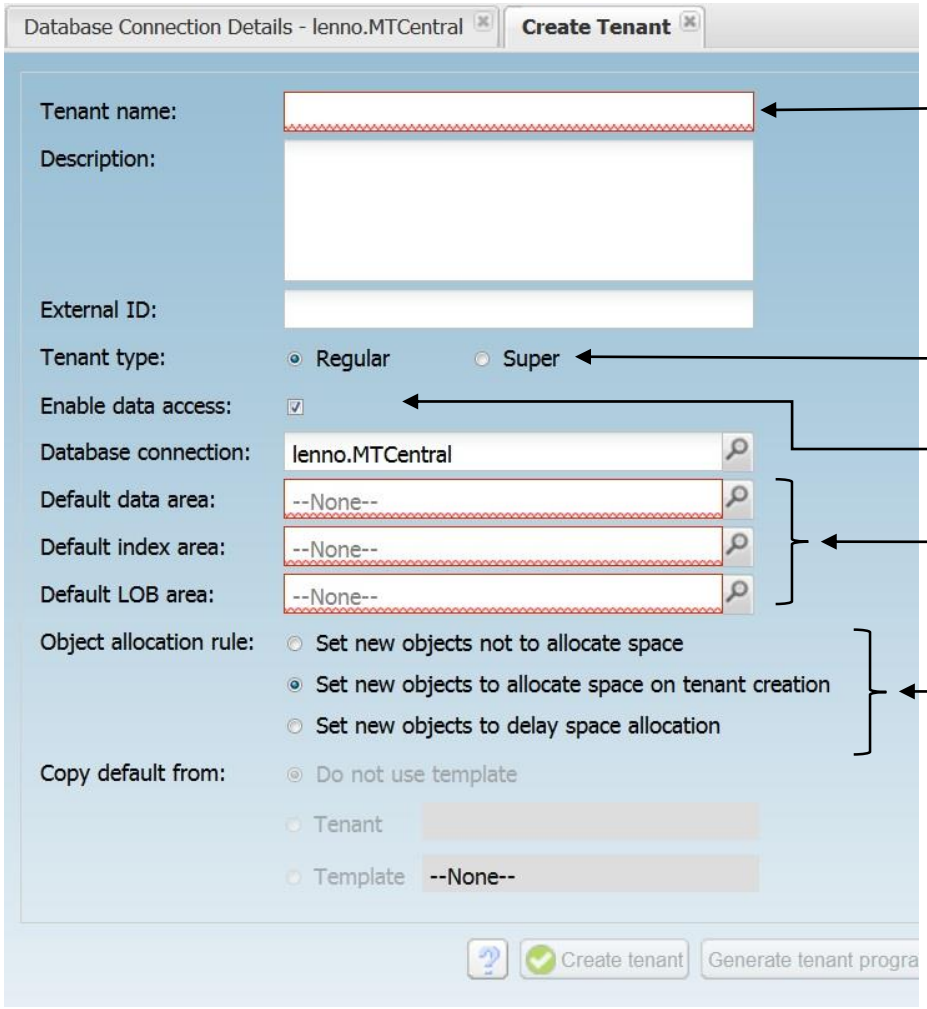
OE Explorer main screen

Maintain Tenants



Make a new tenant

Setting up tenants, domains, and users – Creating Tenants



Tenant Name

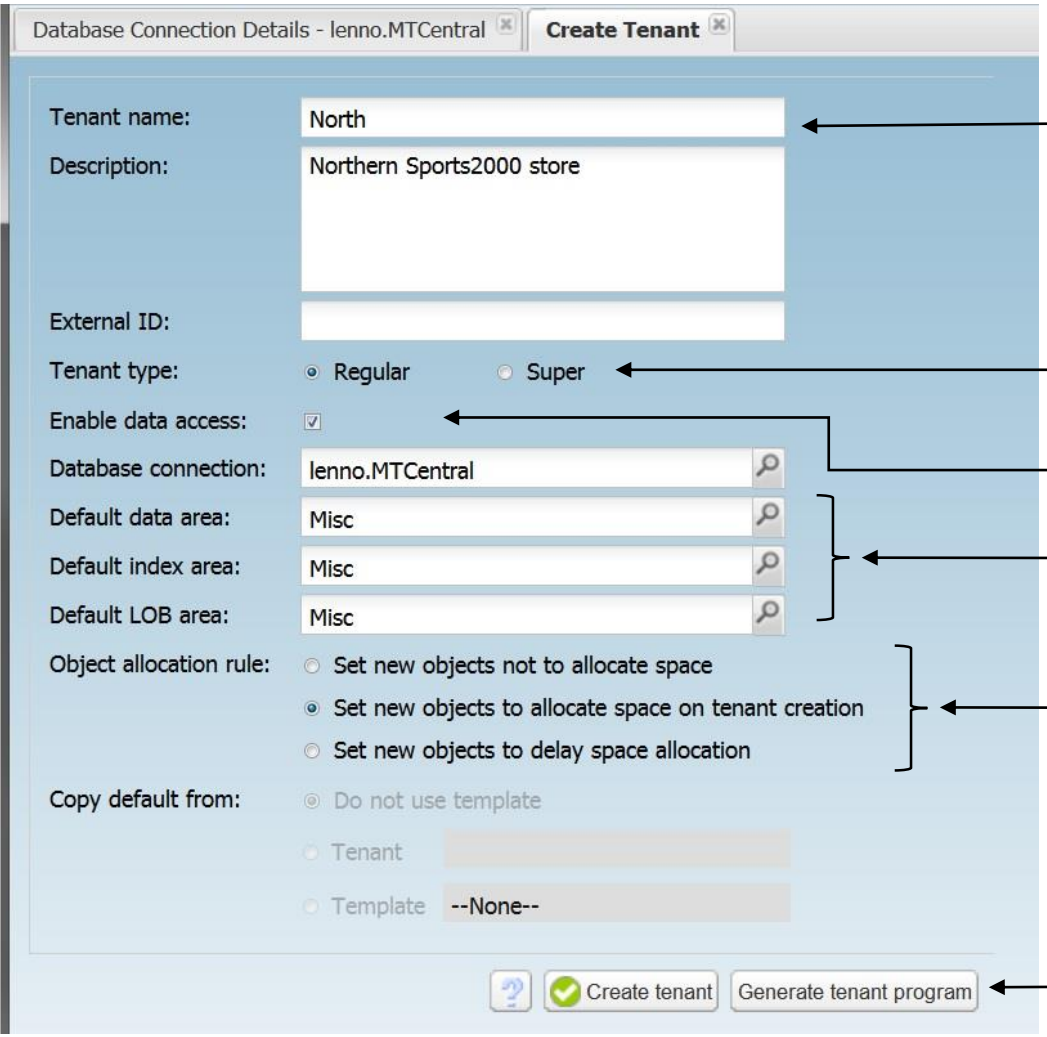
Regular or Super Tenant

Is the tenant allowed access

Where to store new db objects

New db object allocation policy

Setting up tenants, domains, and users – Creating Tenants



Tenant Name

Regular or Super Tenant

Is the tenant allowed access

Where to store new db objects

New db object allocation policy

How to create the tenant

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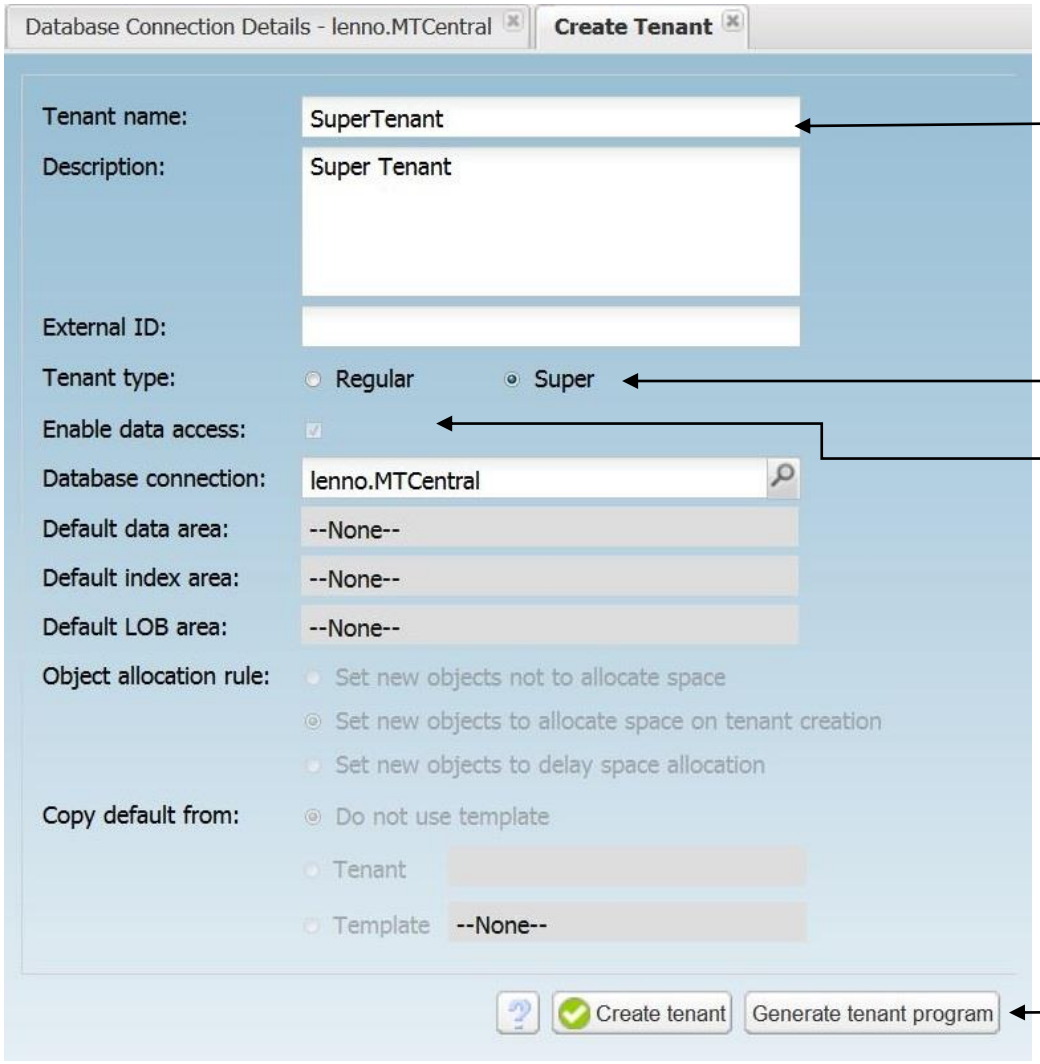
Setting up tenants, domains, and users – Creating Super Tenants



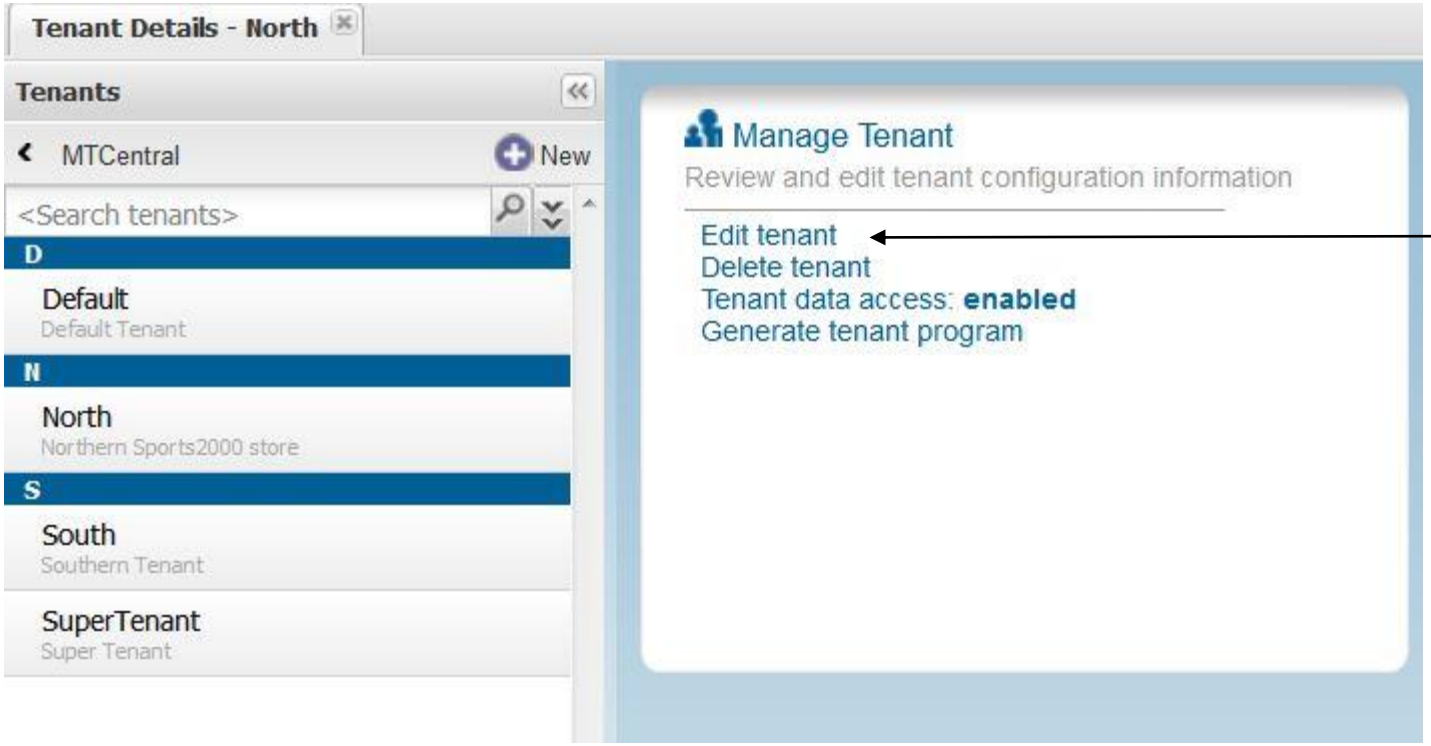
Tenant Name

Regular or Super Tenant

Is the tenant allowed access

How to create the tenant

Setting up tenants, domains, and users – Creating Domains



Have to Edit a Tenant in order to add (a) Domain(s)

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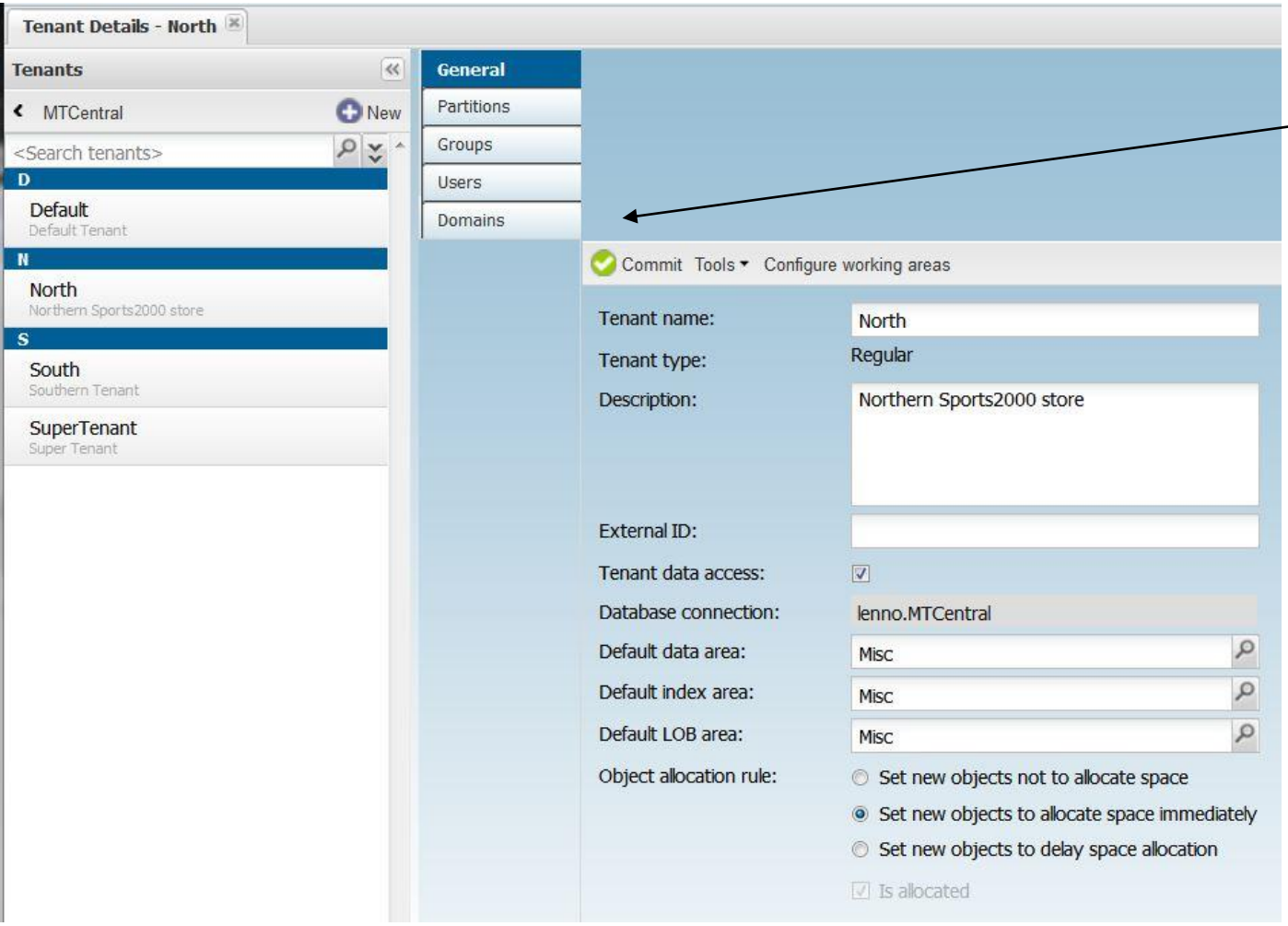
Setting up tenants, domains, and users – Creating Domains



Click To Edit Domain

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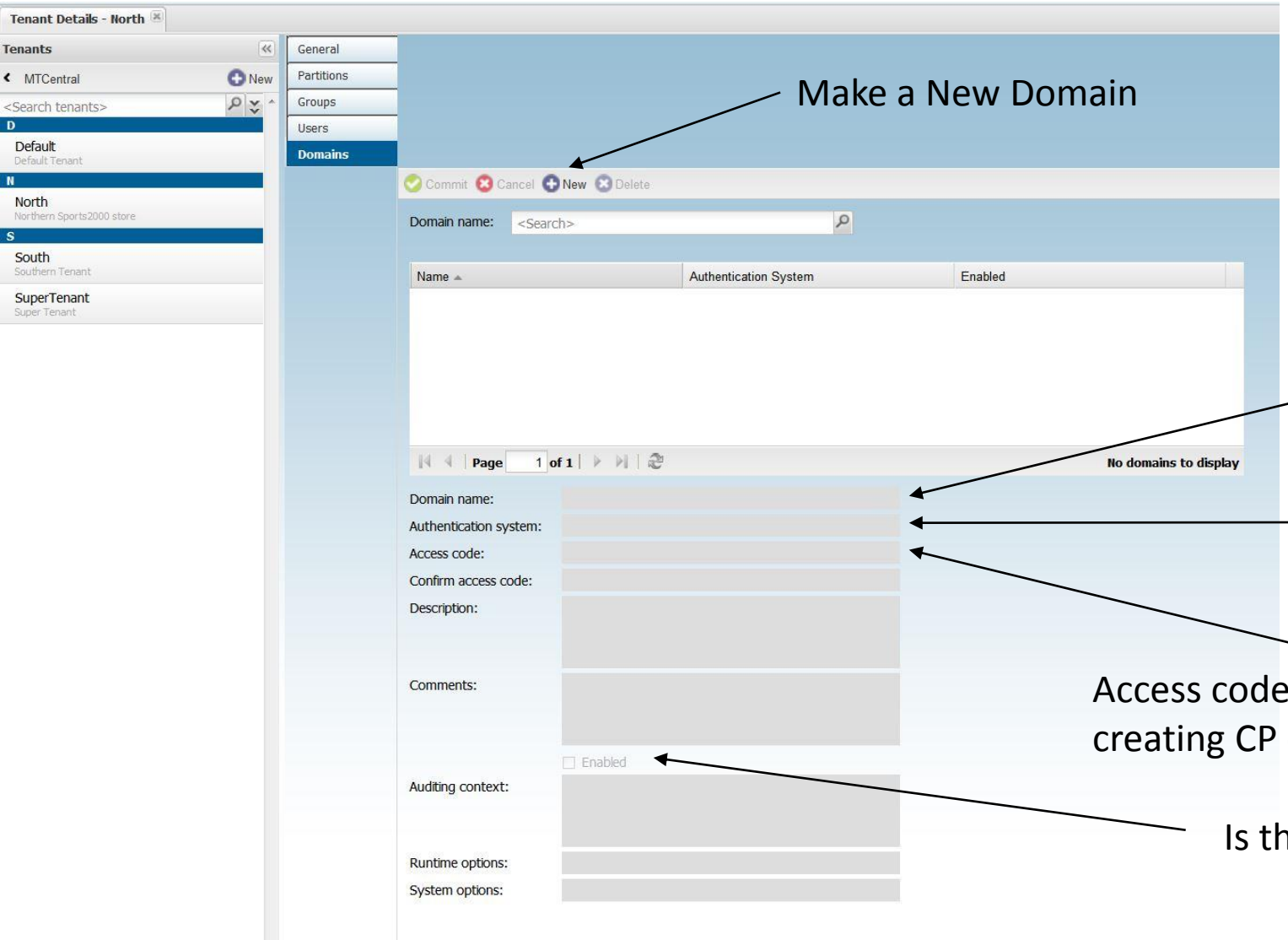
Setting up tenants, domains, and users – Creating Domains



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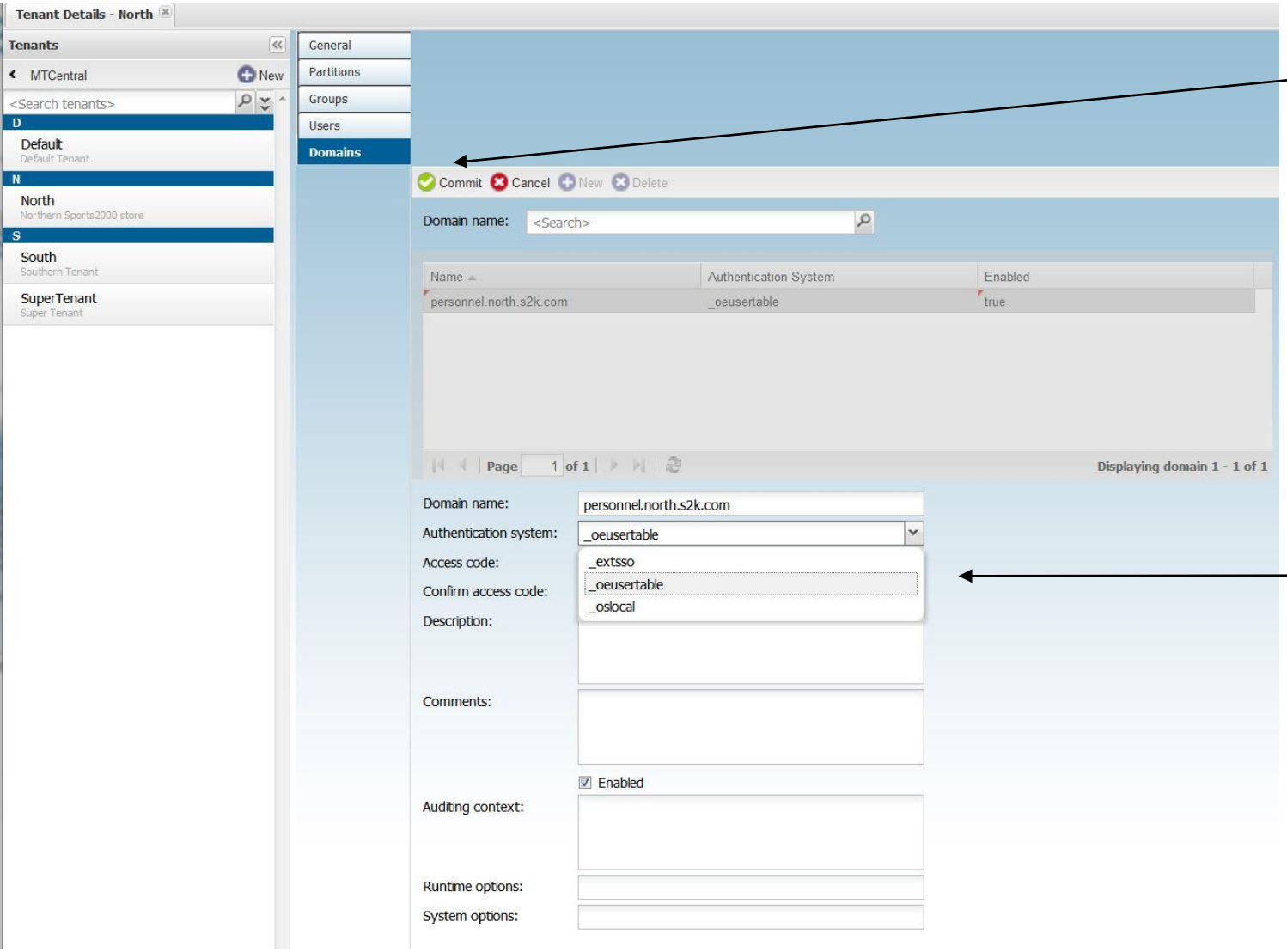
Setting up tenants, domains, and users – Creating Domains



"Commit" when done

How to authenticate a user

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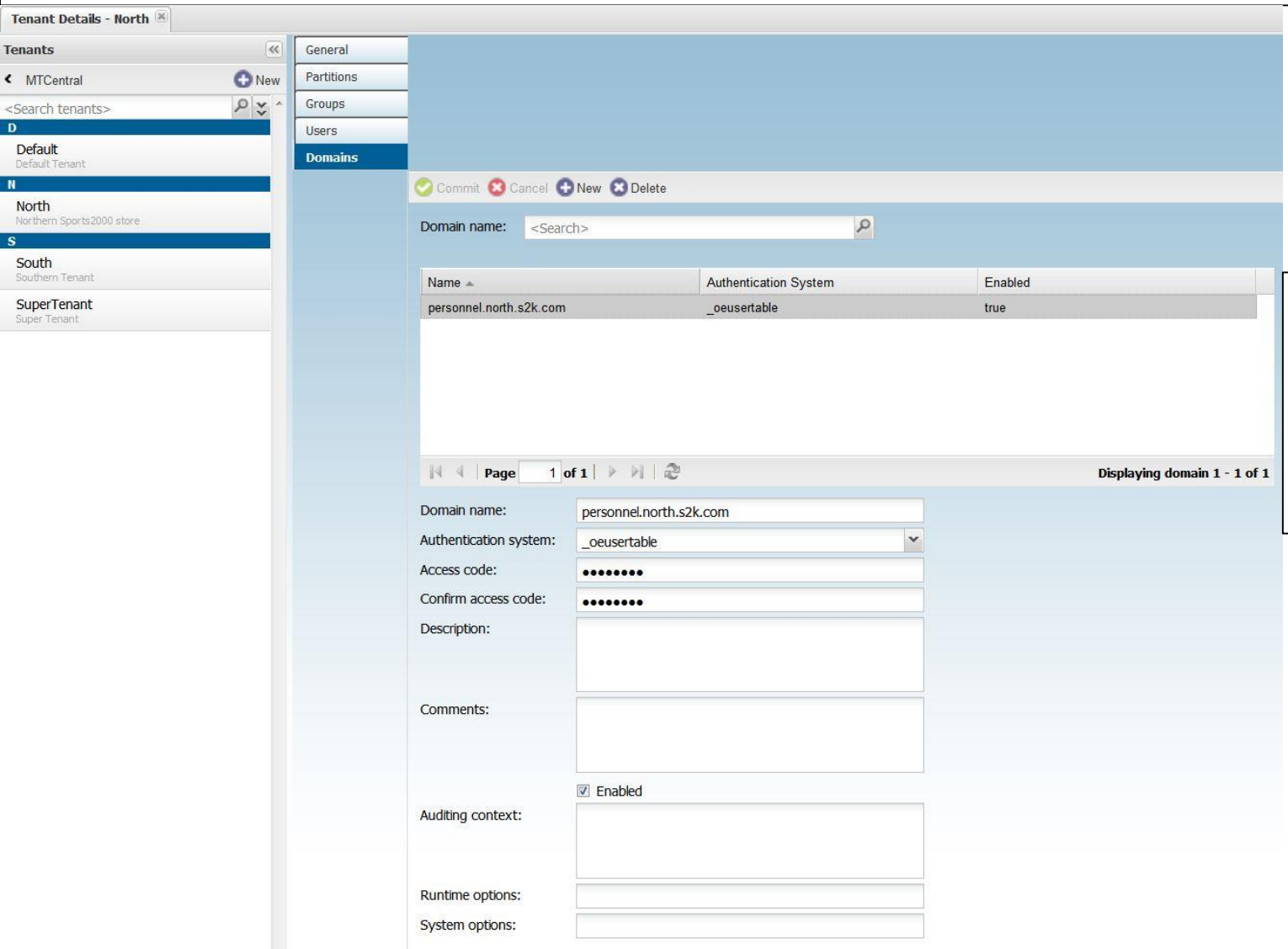
Setting up tenants, domains, and users – Creating Domains



How things look after the “personnel” domain’s been added

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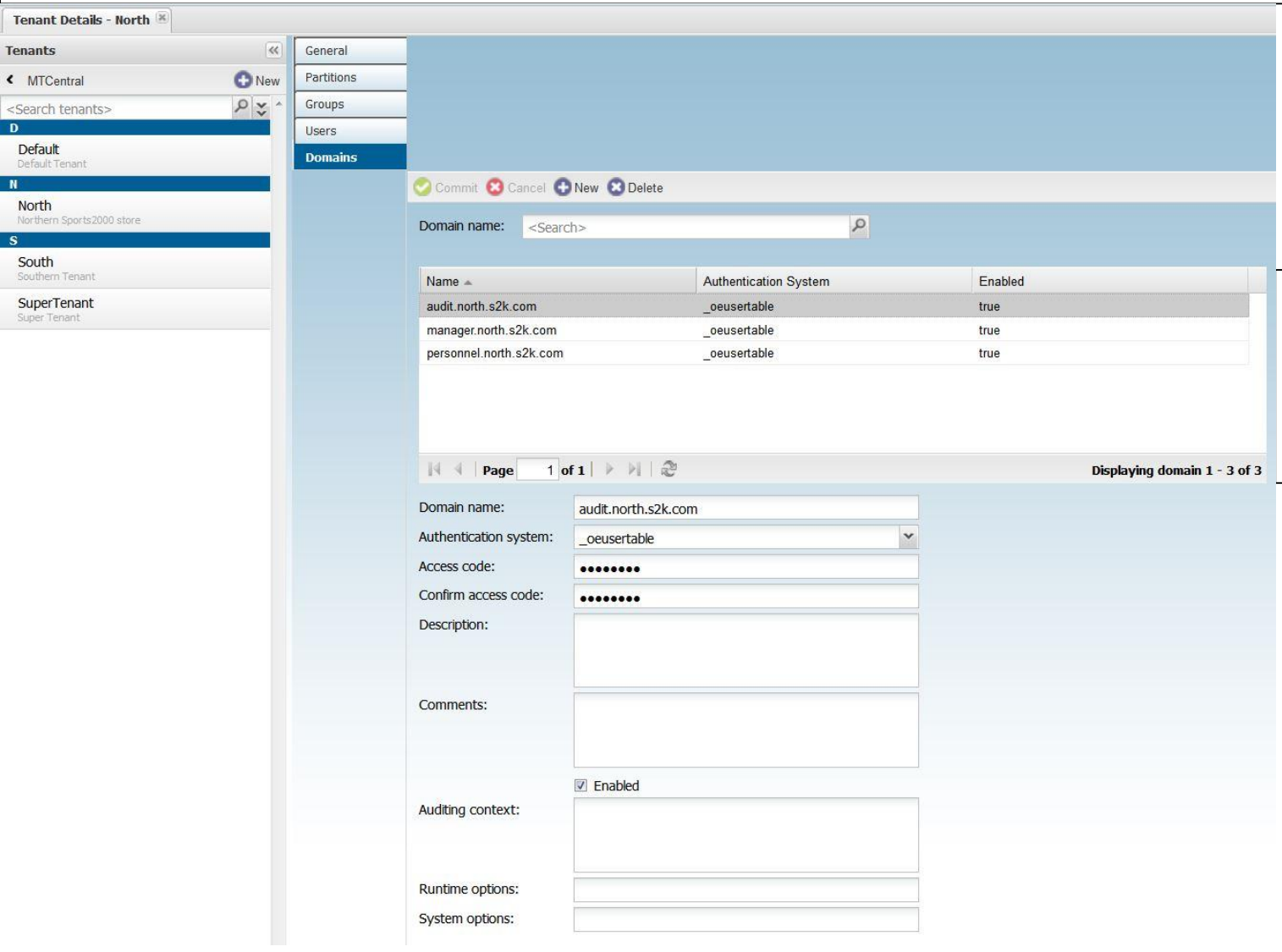
Setting up tenants, domains, and users – Creating Domains



And how they look after all the “north” domains have been added

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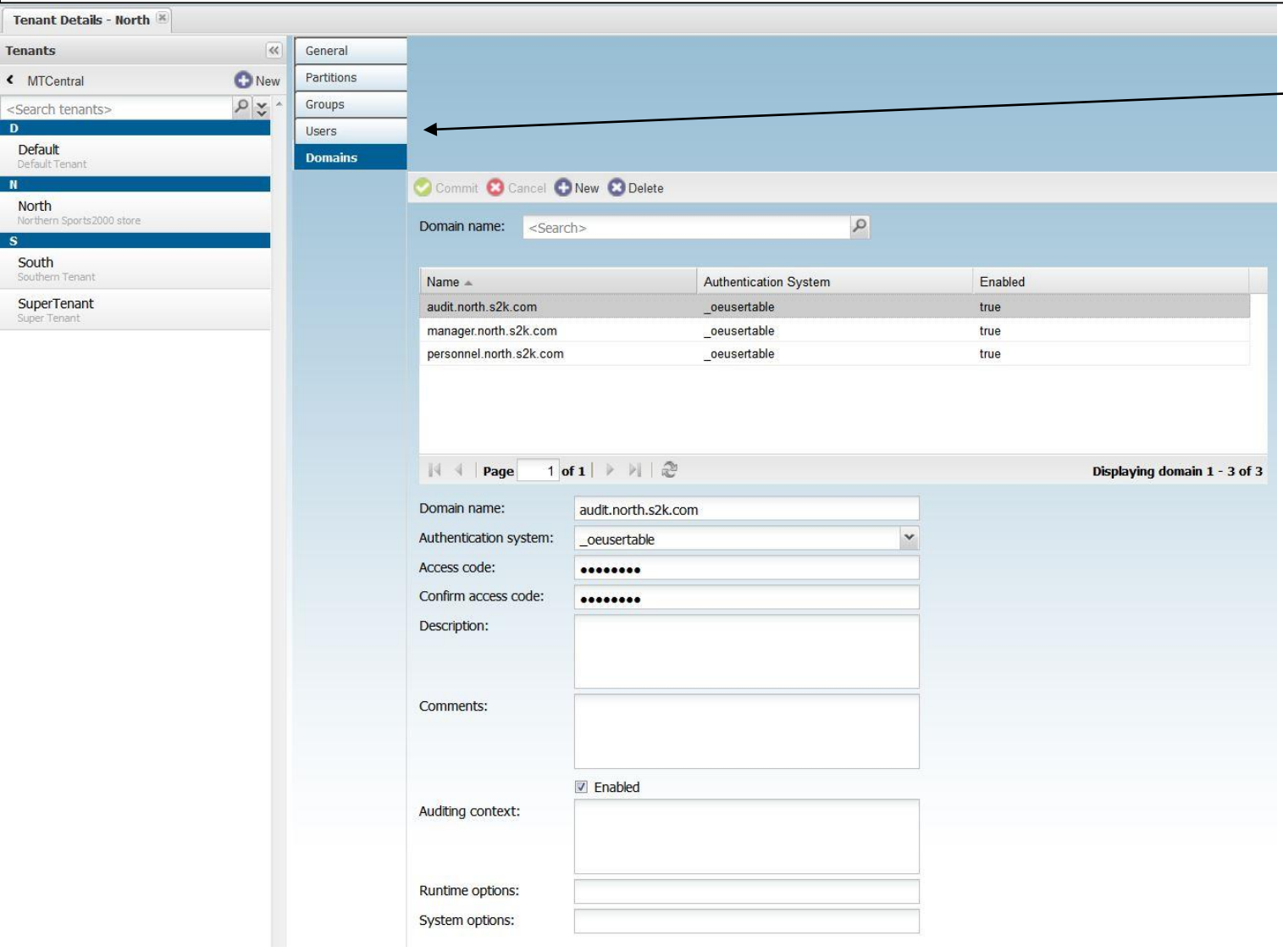
Setting up tenants, domains, and users – Creating Users



Click to add users

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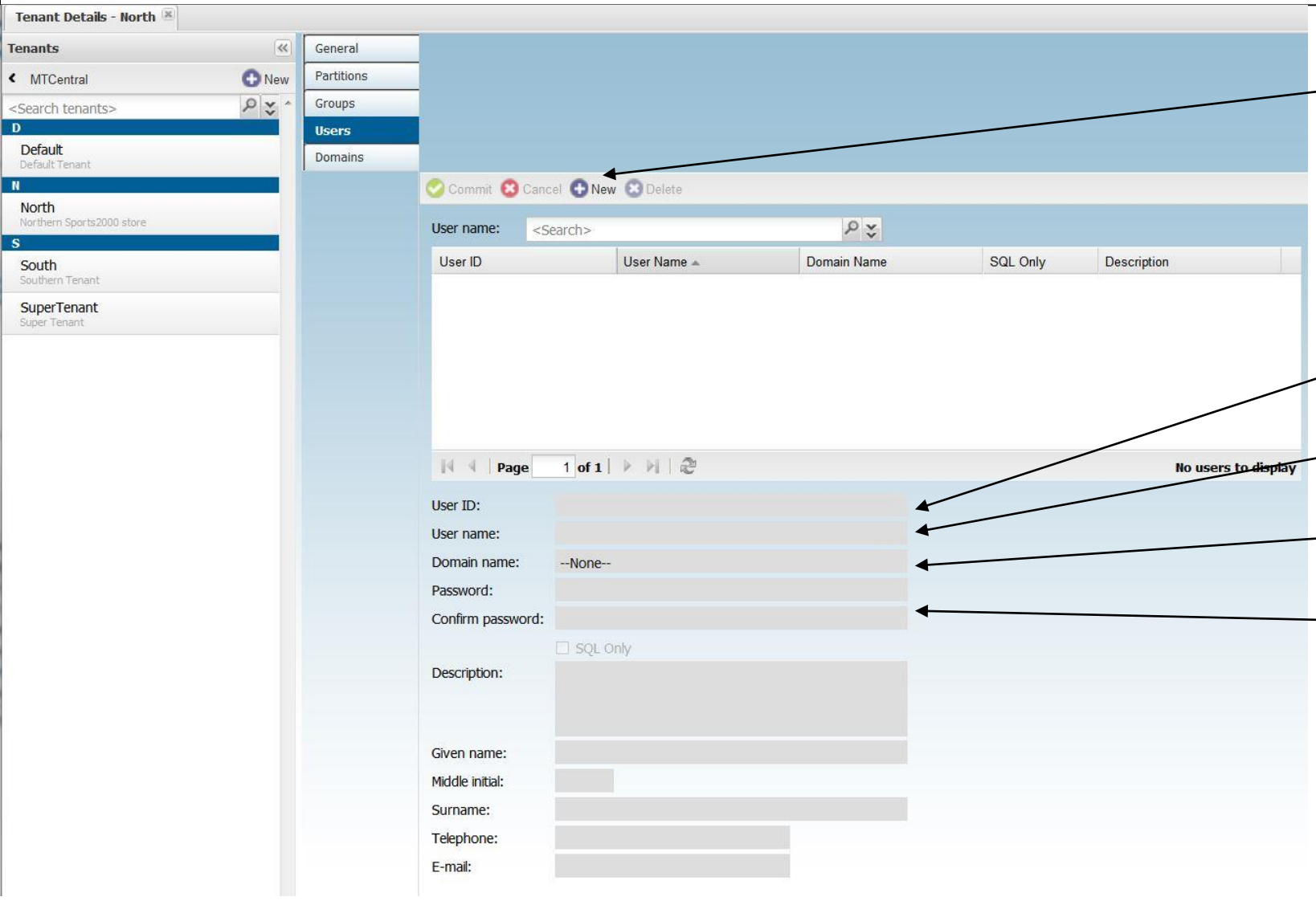
Setting up tenants, domains, and users – Creating Users



Create a blank new user

ID for user

Name

Domain

Password

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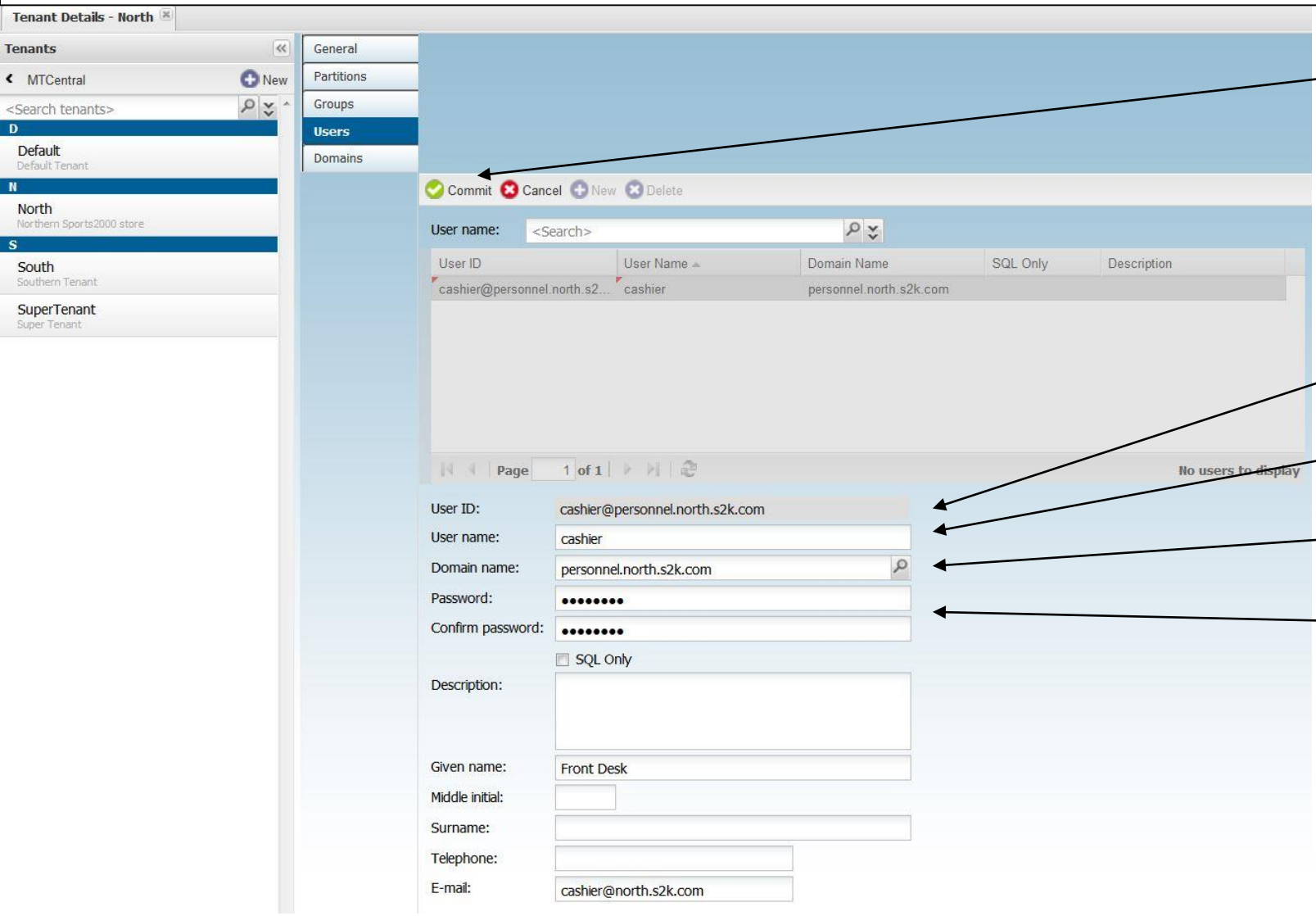
Setting up tenants, domains, and users – Creating Users



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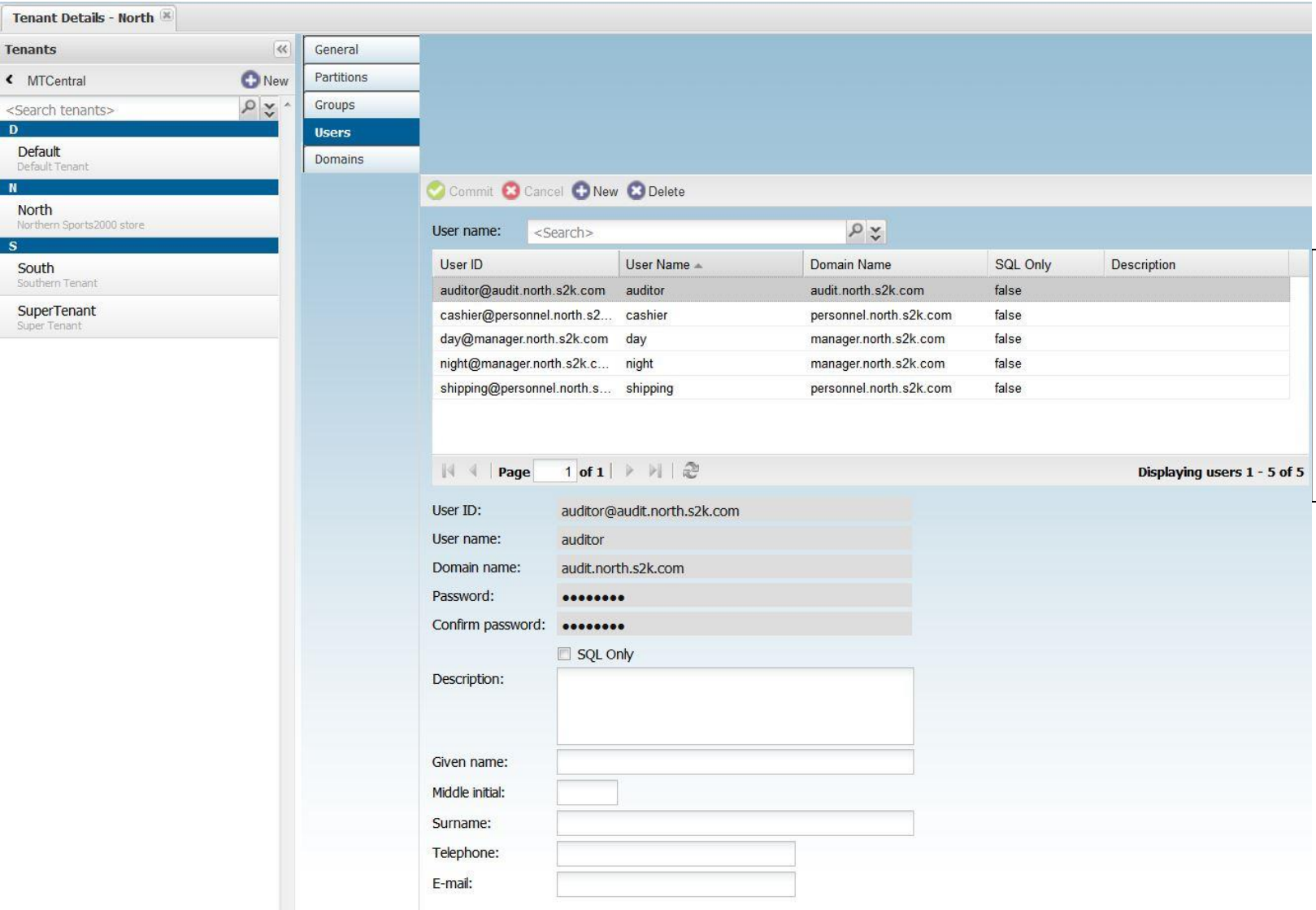
Setting up tenants, domains, and users – Creating Users



How things look after all the “north” users have been added

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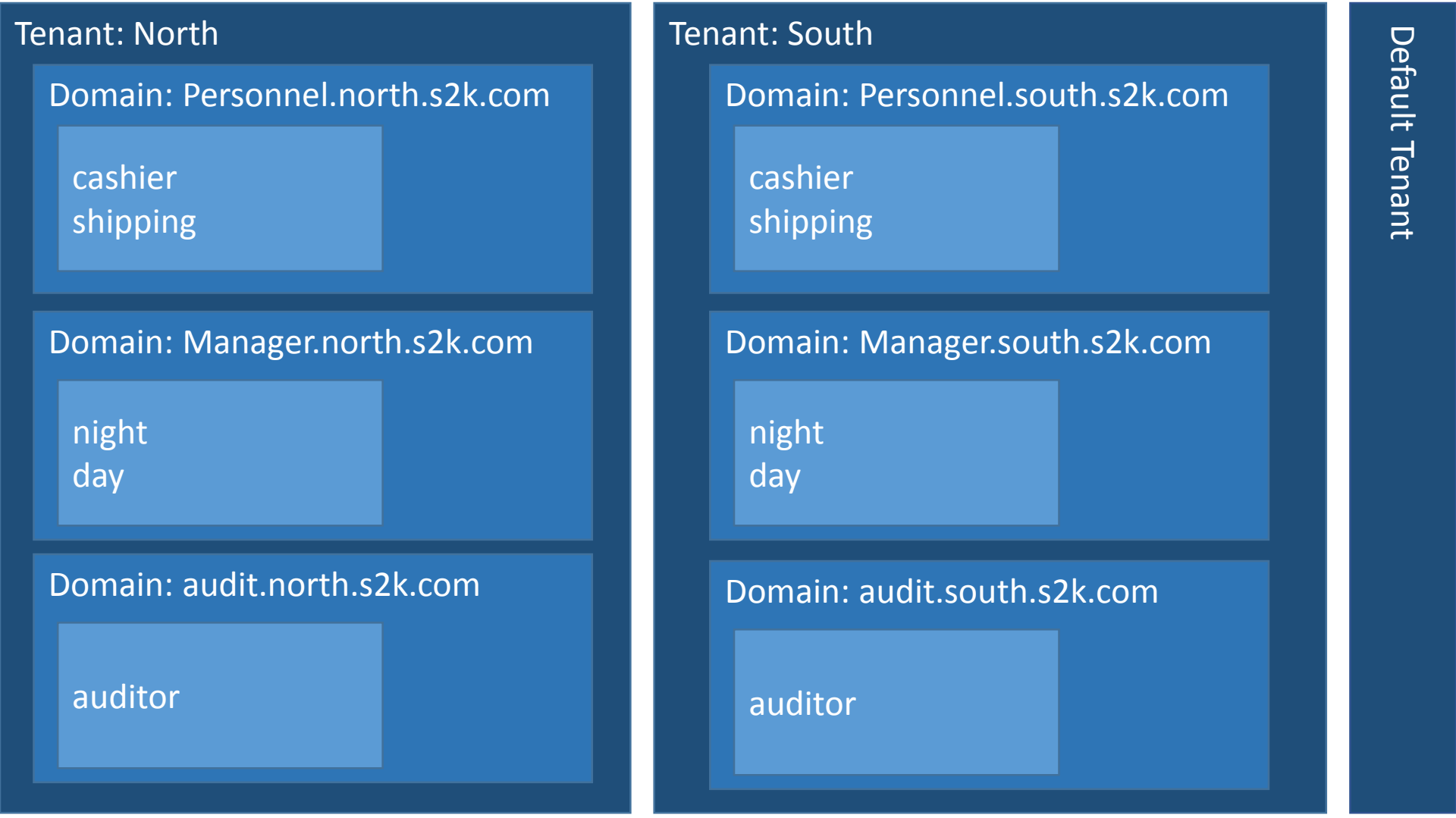
MT Tenant - Final Configuration



Tenants need their data….

Loading the Tenant Data

D:\test\MT\central\db>mpro sports2000 -U superuser@superdomain.s2k.com -P password

- Go to the Data Admin Tool
- Admin->Load->Table Contents
- Select all tables to load

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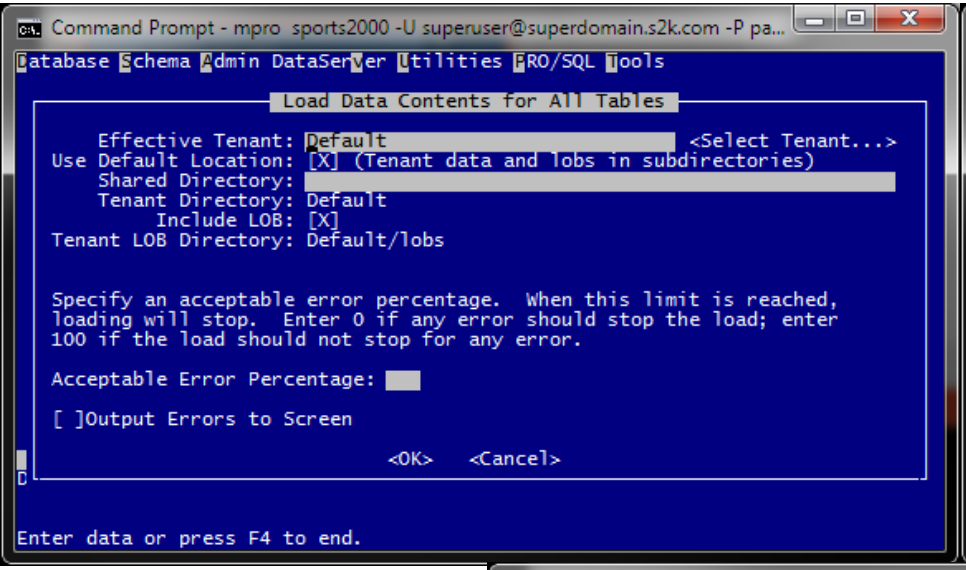
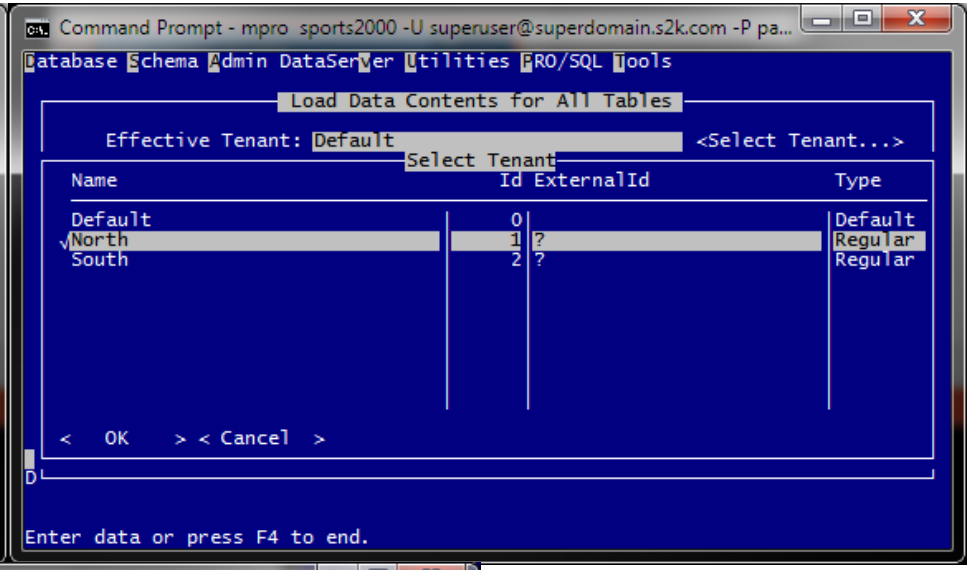
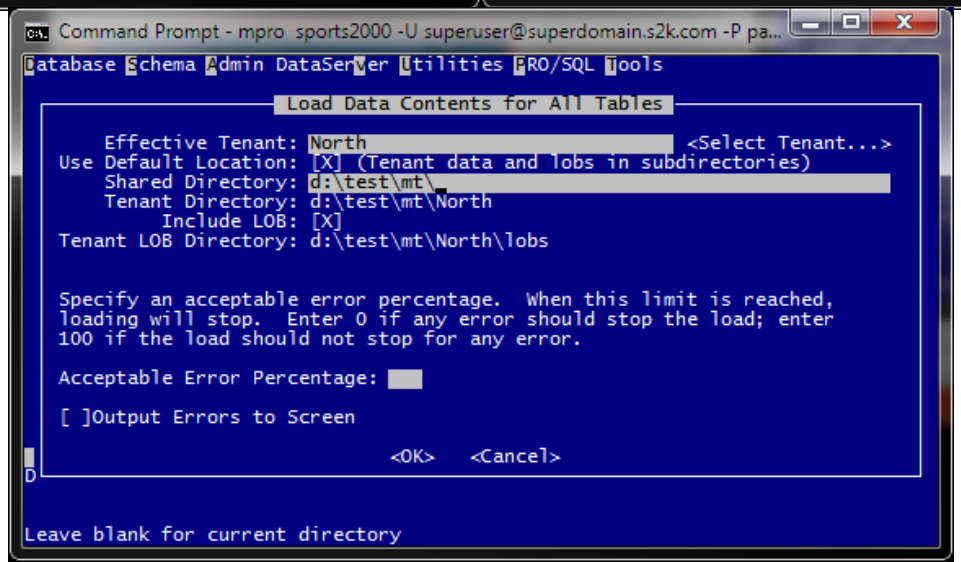
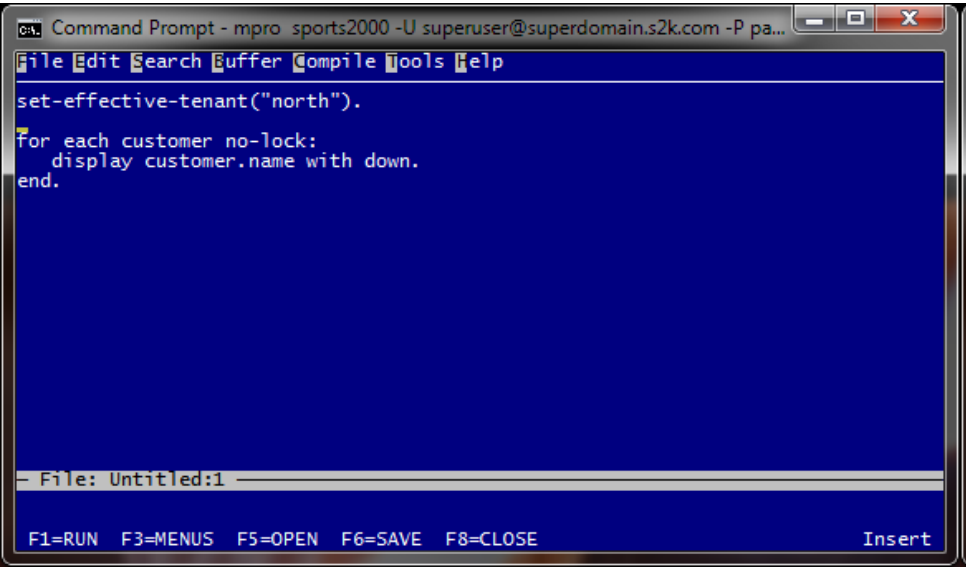
Loading the Tenant Data

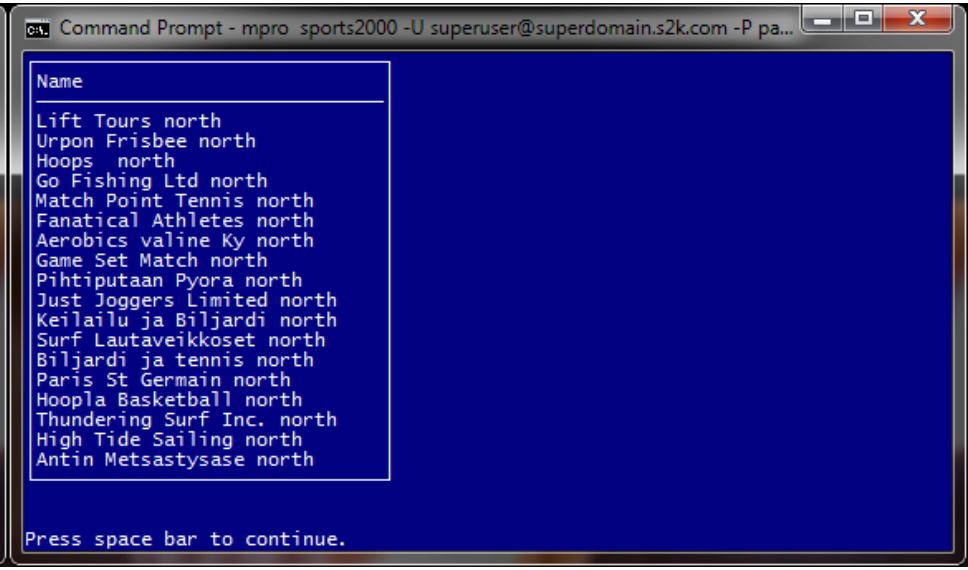




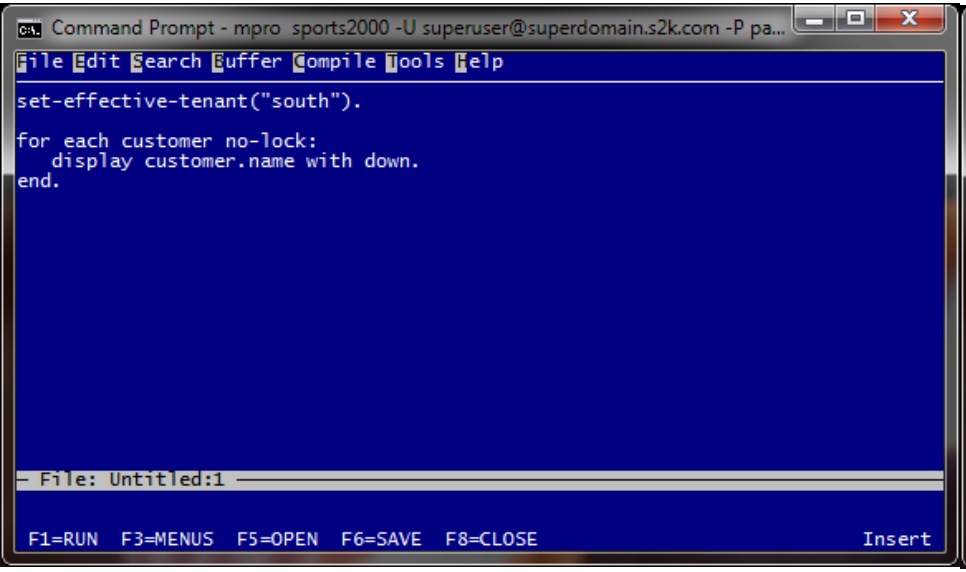


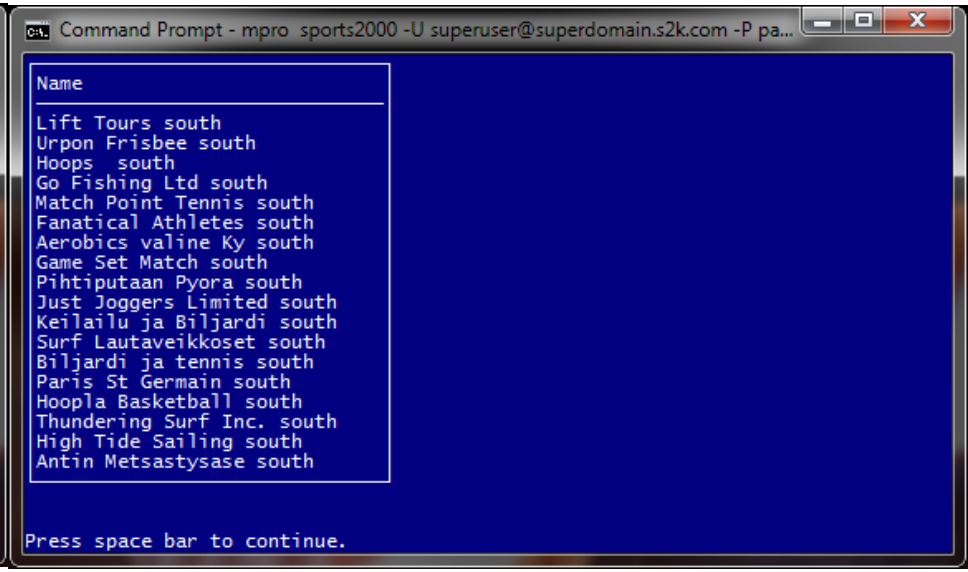
Loading the Tenant Data





Loading the Tenant Data





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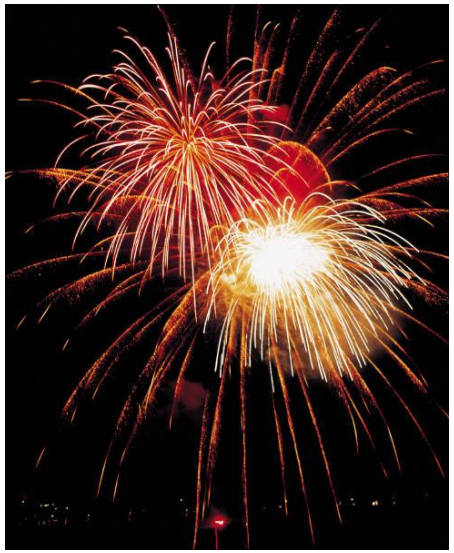
And there was great celebration!



Until someone asked about the elephant in the room…

What about appservers?

What about webservices?

Client Principal to the Rescue!

Client-Principal: A security token containing trusted user credentials that establish user identity for an ABL session and database connection(s).

Types of CP objects:

Type	Description
Unsealed	The CP object information has not been authenticated and can be changed. (See the "LOGIN-STATE" attribute for more details)
Sealed	CP object values have been set to authenticate access to the user@domain's tenant, then converted to a tamper-proof token that can't be changed.

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Client Principal – Establishing a Session

Receive login information

Authenticate

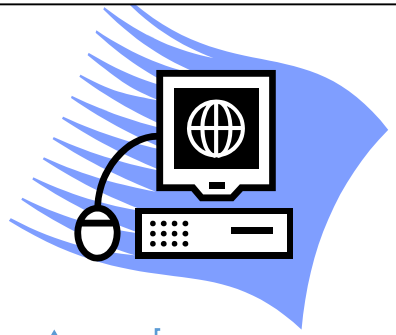
Create sealed CP object

Return session token

Create session token

Store CP object in a safe place

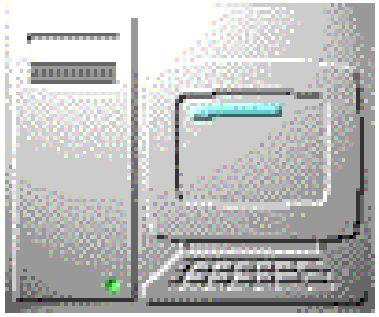
Client Principal – Making a Session Service Call



Pass session token to service

Validate session token

Get session's CP object

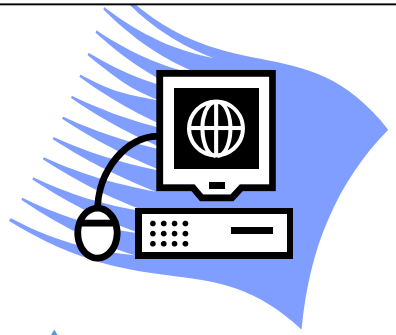


Return results to caller

Perform work

Assert identity

Client Principal – Making a Remote Session Service Call



Pass session token to service

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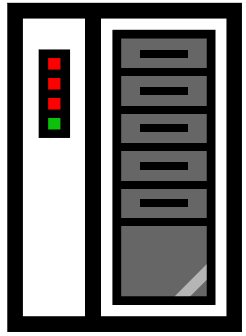

Pass CP to remote server

Assert identity

Perform work

Return results to caller

PUG Challenge Americas - Client Principal and Security Sessions

- Programming with the Client-Principle Object -- Chris Longo
- Basics of Identity Mgmt in OpenEdge (Part I) -- Peter Judge
- Coding with ID Mgmt and Security (Part II) -- Peter Judge
- Server Access - The REST of the Story -- Mike Jacobs

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Question Period

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Thank you for your time!

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This presentation brought to you by:

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