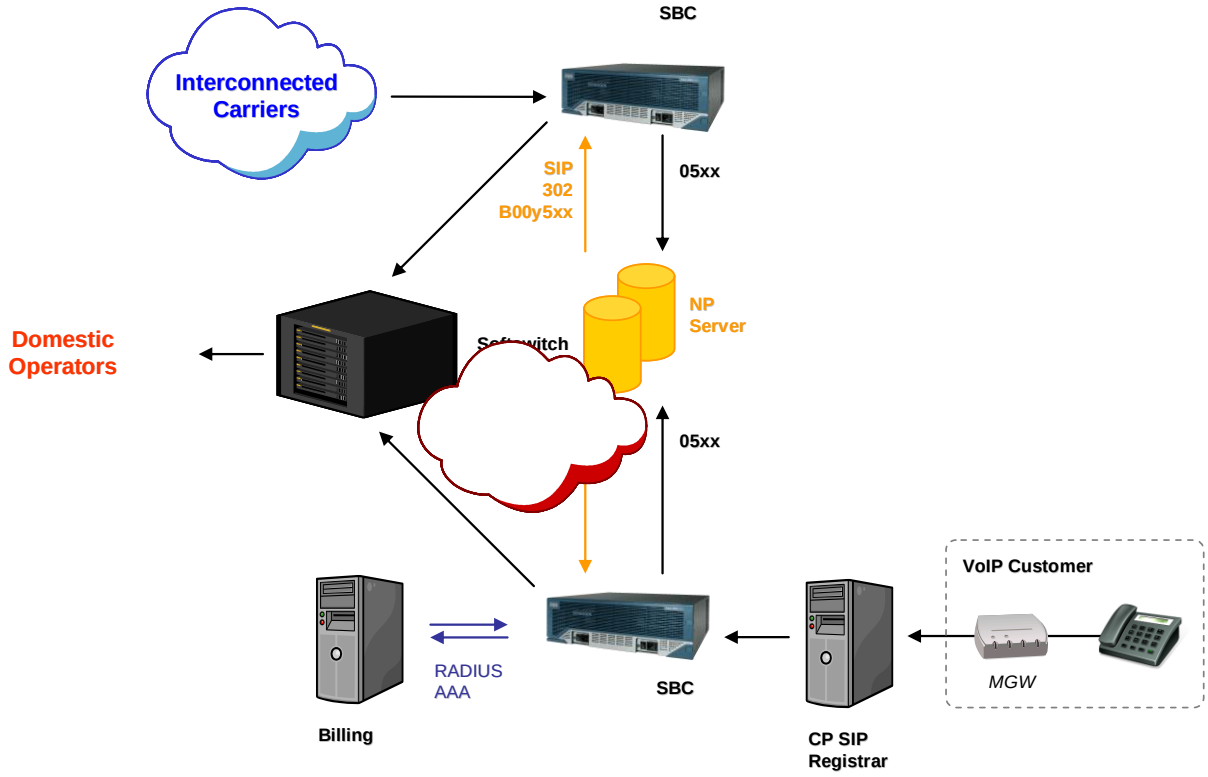
NP (Number Portability) **Server**

NPServer is SIP Redirect Server developed using Microsoft .NET Framework 2.0. It returns operator information by querying a table which holds ported number records in a Microsoft. SQL Server or Microsoft Access database *(MDB)*. NGN components communicate with NPServer using SIP 2.0 protocol.

Network Diagram

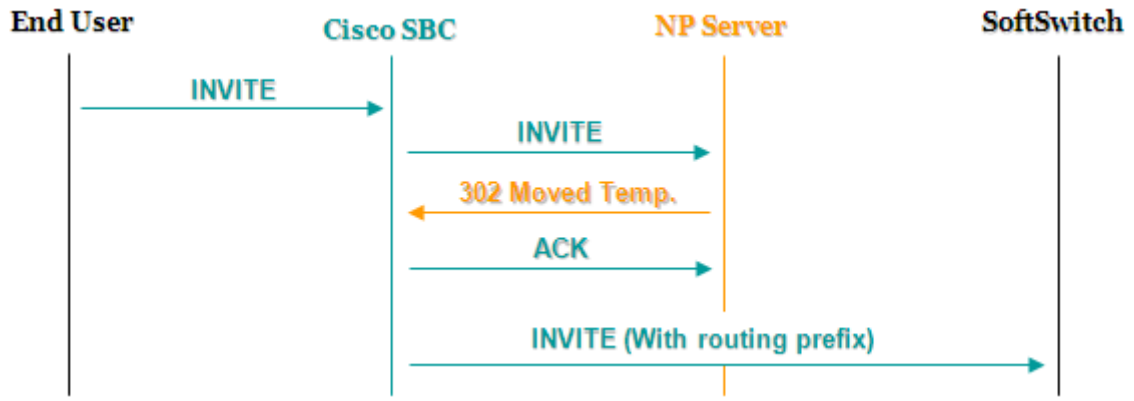


NPServer is located between session border controller which provides interface to interconnecting carriers and end users, and operator's NGN network. Calls to prefixes for 05 are routed NP Server first, and if the number is ported to another operator a SIP 302 response which contains prefix of the host operator of the ported number will be sent to originating SBC. Routing prefixes for telecom operators assigned by Turkish Telecommunications Authority are listed below:

- **B001** Avea
- **B002** Turkcell
- **B003** Vodafone
- **B030** Türk Telekom

If called number is not ported, NP Server will reply with a SIP 302 response which contains prefix of the home operator of the called number will be sent to originating SBC. SBC will route the call to the number specified in Contact header of SIP 302 response.

Exchanged SIP messages for a sample session are shown the diagram below:



Database

If SQL Server is used as database, ported number entries are hold in a table called "Portings" in following record structure;

```
USE [NPDB]
GO
SET ANSI_NULLS ON
GO
SET QUOTED_IDENTIFIER ON
GO
CREATE TABLE [dbo].[Portings](
      [Number] [nchar](10) NOT NULL,
      [Route] [nchar](14) NOT NULL,
      [PortID] [nchar](30) NULL,
      [PortingTime] [datetime] NULL,
      [Action] [nchar](20) NULL,
 CONSTRAINT [PK_Portings] PRIMARY KEY CLUSTERED
(
      [Number] ASC
)
) ON [PRIMARY]
```

Sample records are listed below in "Portings" table:

```
Number     Route          PortID             PortingTime             Action
---------- -------------- ------------------ ----------------------- ----------
5322181176 B0015322181176 129398489          2008-08-27 00:00:00.000 Ported
5322341111 B0035322341111 123091211          2008-09-01 00:00:00.000 ToBePorted
```

"Number" field holds original subscriber number. Route number contains subscriber number prefixed with host operator's prefix. Other fields are informational.

Configuration

NPServer reads configuration parameters from a configuration file *(NPServer.ini)* located in the same directory at startup.

Configuration parameters in NPServer.ini explained below:

```
[Server]
' IP address which is bonded to the NPServer. "Default" value is 127.0.0.1.
ListenIP=192.168.10.1
' Service port (UDP)
```

```
ListenPort=5060
' SIP Domain. "Default" is ListenIP. Domain in Contact header of 302 responses
' contains this value
SIPDomain=192.168.10.1
' Logging level, 0 for disabling Logging.
' "Default" is  "0".
Logging=1
' Is it possible to use ENUM to query NP database.
ENUMLookupEnabled=0
' Set "1" for SQL server. If set to "0" there must be an Access file named
' NPServer.mdb which contains "Portings" table in the same directory
UseSQLServer=1
' Prefixes for un-ported numbers
RoutingPrefixes=532|B002;505|B001;542|B003

[Database]
' SQL Server IP address, "Default" value is 127.0.0.1
SQL_Server=127.0.0.1
' Database which holds Portings table. "Default" is NPDB.
Catalog=NPDB
' SQL server user name. "Default" is "sa".
Username=sa
' SQL server user password. "Default" is blank.
Password=
' SQL connaction timeout (Seconds)
Timeout=30
```

Any change in configuration settings requires a service re-start.

Typical SBC configuration is shown below *(Cisco)*:

```
dial-peer voice 10 voip
 description -- Outgoing 1 --
 destination-pattern 05T
 session protocol sipv2
 preference 1
 session target ipv4:<NP Server IP Address>:5060
!
dial-peer voice 20 voip
 description -- Outgoing 2 –
! for Carriers
! destination-pattern <carrier code>T
 destination-pattern .+
 session protocol sipv2
 session target ipv4:<SoftSwitch IP Address>:5060
!
```

Dial-Peer 10 forwards calls to NP Server and Dial Peer 20 routes calls to Softswitch according to the NP Server response.

Troubleshooting

System errors are logged to NPServer.log which can be found in the same directory where NPServer.exe installed. Logging level can be set "Logging" parameter in NPServer.ini. It's recommended to keep logging level high for long period of time under heavy load.