NextServe:
A Service-Centric Networking Approach

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Agenda

> Introduction

> Considerations in Service-Centric Networking

> NextServe

> Work in progress: Routing and Security.
Content-Centric Networking (CCN)

Host-to-Host Networking

Content-Centric Networking
Service-Centric Networking (SCN)
Survey in Service-Centric Networking

CCNxServ, Serval, SoCCeR, NFN, ...
Considerations in Service-Centric Networking

- SCN architecture should be distributed.
- Service names should be user friendly and self explanatory.
- SCN should be easily deployed.
- SCN should not affect how services are implemented.
- SCN should support caching.
- Services should support multiple parameters (like native code methods).
- Services should support nesting (services can be passed as parameters).
- Services should support local parameters.
Our Approach in SCN: NextServe

Service Name is:
/prefix1/ prefix2 /.../ ServiceName // (param1,param2,.../).

Example:
/scn/encrypt/(“P@ssw0rd”,/fileManager/zip/(/university/profile.pdf)/)/.
NextServe: Process Example

/scn/encrypt("P@ssw0rd",/fileManager/zip(/university/profile.pdf)/)

/university/profile.pdf

/fileManager/zip

/scn/encrypt

/client
NextServe: Process Example

\[\text{scn/encrypt(“P@ssw0rd”,/fileManager/zip/(/university/profile.pdf)/)}\]
NextServe: Process Example

`/scn/encrypt("P@ssw0rd",/fileManager/zip/(/university/profile.pdf)/)`
NextServe: Process Example

/scn/encrypt("P@ssw0rd",/fileManager/zip/(/university/profile.pdf)/)
NextServe: Process Example

\[ /\text{scn/encrypt}("P@ssw0rd"; /\text{fileManager/zip}(/\text{university/profile.pdf})) /\]

1. Client
2. /scn/encrypt("P@ssw0rd", /fileManager/zip(/university/profile.pdf/))
3. /fileManager/zip(/university/profile.pdf/)
4. /university/profile.pdf

NextServe: Process Example

\[ /\text{scn/encrypt}("P@ssw0rd"; /\text{fileManager/zip}(/\text{university/profile.pdf})) /\]
NextServe: Process Example

/scn/encrypt("P@ssw0rd",/fileManager/zip/(/university/profile.pdf)/)
NextServe: Process Example

\[
/scn/encrypt(“P@ssw0rd”,/fileManager/zip(/university/profile.pdf/))
\]
NextServe: Architecture

Services

Service Publishing Layer

CCN

Parameter Retriever

Service Publisher

NameParser

CCN Connector
Work in Progress: Routing Scheme

- SoCCeR: is the only routing scheme for services over ICN.
- ACO algorithm.
A lot of work has been done in this regard, based on: **Signing the content**

**Work in Progress:**

**Security Challenges**
Work in Progress: Security Challenges

A lot of work has been done in this regard, based on: Signing the link (name, content)
Work in Progress: Security Challenges

- Content may be changed by the "service"

- Legacy authentication schemes are not applicable anymore