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# XINS Protocol

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## Introduction

This document describe the requirements to write a XINS compliant API.

## Input requirements

XINS is a framework for invoking functions remotely using HTTP.

- HTTP GET must be supported
- HTTP POST must be supported
- The query must have a `_function` parameter which is not empty and which contains the name of the function invoked. If this parameter is missing, or has an invalid value, or the value is not a name of a defined function, a HTTP 404 code must be returned.
- If a parameter is sent without value, it should be considered as missing.

## Output requirements

XINS returns an XML document as output.

- The root element of the returned XML must be `result`.
- If a result code is returned, the result element must have a `errorcode` attribute.
- If the result element doesn't have any attributes, the result is considered as successful.
- Returned parameters should be returned with sub-elements `<param name="name1">value1</param>`.
- The returned XML may contain a `data` element with sub-elements.
- If some parameters are missing or the value of a parameter does not match the type, an `_InvalidRequest` error code should be returned.

- If a generic error is generated in the implementation of the function an `_InternalError` error code should be returned.

## Default error code

XINS includes standard error codes for common errors.

- `_InternalError`

This error code is returned when the implementation of the function has thrown an error.

- `_InvalidRequest`

This error code is returned when the given parameters do not comply with the specification of the input. The cases where this could happen is when a required parameter is missing, the value of a parameter does not match the type or the combination of a `param-combo` set in the specification.

- `_InvalidResponse`

This error code is returned when the returned parameters do not comply with the specification of the output.

- `_DisabledFunction`

This error code is returned when a function has been disabled. You can only have this error code if the framework has implemented the `_DisableFunction` (and `_EnableFunction`) meta function.

For more information about what the elements should contain when a standard error code is returned, look at the examples.

## Conventions

Result codes, function names and parameters starting with an underscore are reserved for XINS.

- Result codes are written with the hungarian convention and starting with an uppercase (e.g. `DisabledAccount`).
- Function names uses the hungarian convention and starting with an uppercase (e.g. `CheckMIP15`, `GetSessionDetails`).
- Parameters for the request are in lowercase (e.g. `zipcode`).
- Returned elements and attributes are in lowercase. e.g.

```
<?xml version="1.0" encoding="UTF-8"?>
<result>
  <param name="csr">anne8</param>
  <param name="loggedIn">>false</param>
  <data>
    <property name="upgrade" value="true" />
  </data>
</result>
```

- Returned parameter names use the hungarian convention starting with a lowercase (e.g. `loggedIn`, `mainAccount`, `accountID`).

- The values of the parameters or of the attribute values for the data elements can be anything you want.

## Examples

### Successful result

```
<?xml version="1.0" encoding="UTF-8"?>
<result/>

<?xml version="1.0" encoding="UTF-8"?>
<result>
  <param name="java.version">1.4.1_02</param>
  <param name="xins.version">1.0.0</param>
  <param name="xmlenc.version">0.43</param>
</result>

<?xml version="1.0" encoding="UTF-8"?>
<result>
  <param name="startup">2004.11.30 07:08:13.296</param>
  <param name="availableProcessors">1</param>
  <param name="now">2004.12.07 14:31:51.559</param>
  <data>
    <heap total="531628032" used="80881976" free="450746056" max="603979776"/>
  </data>
</result>
```

### Unsuccessful result

If the error code starts with an underscore, the error code is a standard error code.

```
<?xml version="1.0" encoding="UTF-8"?>
<result errorcode="_InvalidRequest">
  <data>
    <missing-param param="zipcode"/>
  </data>
</result>

<?xml version="1.0" encoding="UTF-8"?>
<result errorcode="UnknownSessionID"/>

<?xml version="1.0" encoding="UTF-8"?>
<result errorcode="BackendFailure">
  <param name="number">11</param>
</result>
```