Broadband Connectivity Service (BBCS)

IP Pool Interface Specification

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Checklist of changes

int.Version	Date	Changed by	Comments / nature of the change
20	08.04.2010	HP	Minor change (name space with version ".v220") in new schema version V220 (included as V220.1)
21	27.04.2011	HP	Version WSG-8.4 / Jun11 - removed operations createPoolNetwork, getBulkSubscribers
22	26.03.2012	Roland Staub	Version WSG-9.0 / May12 - removed unused definitions for already removed methods createPoolNetwork, terminateSubscriber-PppSession, getBulkSubscribers, manualCoa, create-PoolNetwork - removed A/SDSL in enum AccessProtocol - renamed attribute bras-hostname to hostname in type ScopeDefinition
23	28.08.2012	Roland Staub	Version WSG-9.13 / Aug15 - added BX to AccessProtocol - updated SOAP Actions

Release

Version	Date	Released by	Comments / nature of the change
23	05.07.2016	S.Lesli	Released version

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Contents

1   Introduction

The functionality provided by IPPOOL can be accessed via human-machine interfaced (i.e. a Web based GUI) or via machine-machine interface (a.k.a. B2B Interface). This document represents the details specification of the public B2B Interface to IPPOOL.

1.1   Target readership, requirements of the reader

The reader must have a good understanding of the management functionalities around IP-Pools and also be aware about the scope of the implemented functionalities, described in the requirement specification (refer to [1]). Also, he/she must have technical knowledge around web-services and XML.

1.2   Terms and abbreviations

AAA	Authentication, authorization and accounting.
B2B	Business-to-business
DN	A directory number.
HTTP	HyperText Transfer Protocol (HTTP) is the primary method used to convey information on the World Wide Web. The original purpose was to provide a way to publish and receive HTML pages.
OASIS	OASIS (Organization for the Advancement of Structured Information Standards) is a not-for-profit, international consortium that drives the development, convergence, and adoption of e-business standards. The consortium produces Web services standards for security, e-business, and standardization efforts in the public sector and for application-specific markets.
PowerGate	Single sign-on infrastructure for public services at Swisscom.
SOAP	SOAP is a protocol for exchanging XML-based messages over a computer network, normally using HTTP. SOAP forms the foundation layer of the web services stack, providing a basic messaging framework that more abstract layers can build on. SOAP facilitates the Service-Oriented architectural pattern.
URL	A Uniform Resource Locator, URL, or Web address, is a standardized address name layout for resources on the Internet.
W3C	The World Wide Web Consortium (W3C) is an international consortium where member organizations, a full-time staff, and the public, work together to develop standards for the World Wide Web.
Web Service	According to the W3C a Web service is a software system designed to support interoperable machine-to-machine interaction over a network.
WSDL	The Web Services Description Language (WSDL) is an XML format published for describing Web services.
WS-I	The Web Services Interoperability Organization is an open industry effort. Its charter is to promote web services interoperability across platforms, applications, and programming languages.
XML	The Extensible Markup Language (XML) is a W3C-recommended general-purpose markup language for creating special-purpose markup languages.

1.3   Referenced documents

[1] PowerGate service integration concept – "P-SerWin.007 Dienstintegrationskonzept.doc"

[2] Service Provisioning Tools Web Services Interfaces Design – "SPT-Interfaces Version <x>.doc"

[3] WSDL and schema definitions : Web-download from IP-Pool-Web-Application
      (ippool_outbound_wsdl_v<x>.zip)

2 Web Services

The synchronous B2B interfaces are realized as Web services. A Web service is a software system designed to support interoperable machine-to-machine interaction over a network. It has an interface that is described in a machine-processable format such as WSDL. Other systems interact with the Web service in a manner pre-scribed by its interface using messages, which may be enclosed in a SOAP envelope. These messages are typi-cally conveyed using HTTP, and normally comprise XML in conjunction with other Web-related standards. Software applications written in various programming languages and running on various platforms can use web services to exchange data over computer networks like the Internet in a manner similar to inter-process communication on a single computer. This interoperability (e.g., between Java and Python, or Windows and Linux applications) is due to the use of open standards. OASIS and the W3C are the primary committees re-sponsible for the architecture and standardization of web services. To improve interoperability between web service implementations, the WS-I organization has been developing a series of profiles to further define the standards involved.

2.1   Security

The following sections describe the implemented precautions aiming to improve the security of data transport in terms of confidentiality and non-repudiation.

2.1.1   Encryption

To meet the confidentiality aspect of information security the data transport between the web service client and its server is protected using the https schema.

Https is a URI scheme equivalent to the http scheme, originally intended to be used with the HTTP protocol, but with added encryption layer. The URI structure is the same, except that URIs begins with "https:" rather than "http:". The scheme was invented by Netscape Communications Corporation to provide authentication and encrypted communication and is widely used on the Web for security-sensitive communication, such as payment transactions.

Instead of using plain text socket communication, the session data is encrypted using either a version of the SSL (Secure Socket Layer) protocol or the TLS (Transport Layer Security) protocol, thus ensuring reasonable protection from eavesdroppers, and man in the middle attacks. The default TCP port of https: is 443.

2.1.2   Authentication, Authorization, and Accounting (AAA)

To meet the accountability and non-repudiation aspects of information security each Web Service requires username tokens according to the OASIS Web Service Security (WS-Security) definition.

Please consult the PowerGate integration documentation [1] for further details.

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2.2   IPPOOL Web Service Interfaces

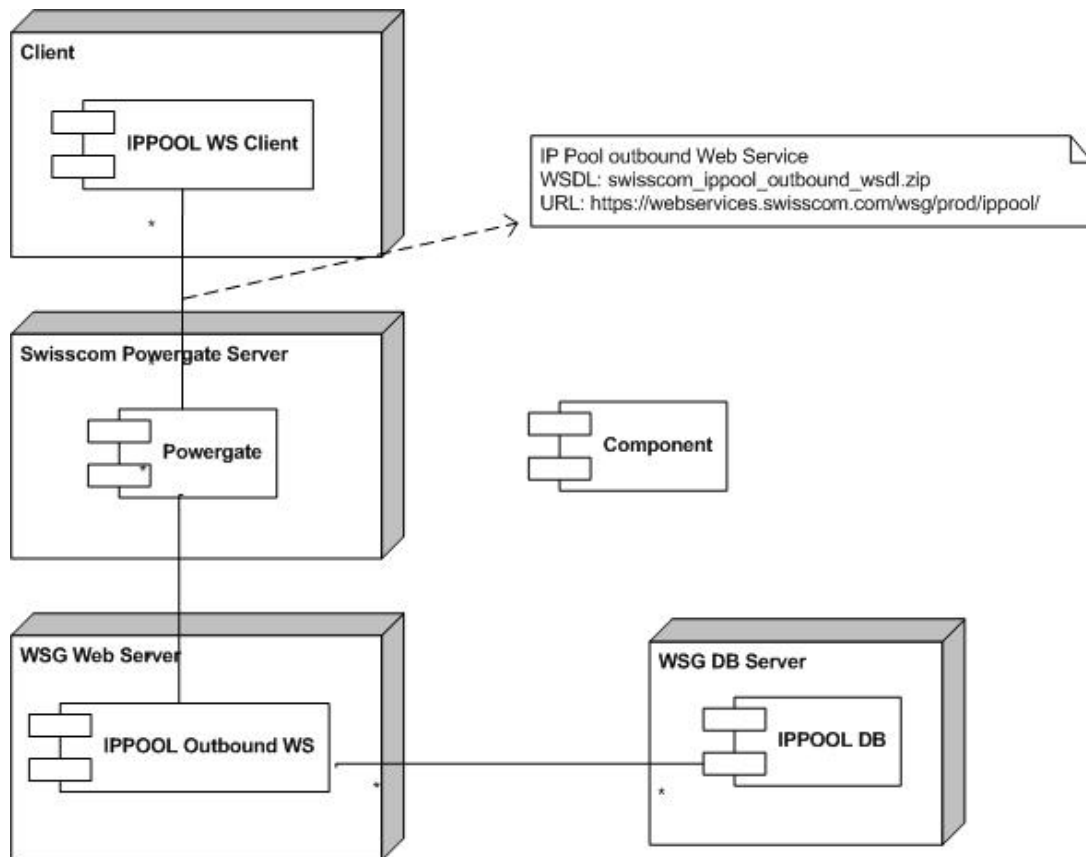Figure 1 shows the basic Web Service Architecture.

Figure 1 – IPPOOL Web Service Architecture

As depicted above, external Web Service clients have to pass PowerGate in order to access outbound (public) Web Services.

The following web services are available within IPPOOL.

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2.3 Available Versions

2.3.1 Actual Version

The actual available web-service version is **Version 2.5.0** and is defined by the web-service definition:

ippool_outbound_wsdl_v250.0.zip (downloadable from within IP-POOL-GUI)

The ZIP-File contains:

ChangeLog.txt	: the details of the changes per released version (change-history).
.xsd,.wsdl	: the schema definition as well as the web-service definition
html/*.html	: an HTML-based documentation of the schema and of the WSDL.

The following web-service operations are available:

Web-Service	Operation
IpAddressPoolService PROD: https://webservices.swisscom.com/wsg/prod/ippool/IpAddressPoolServiceV250 TEST: https://webservices.swisscom.com/wsg/isp/ippool/IpAddressPoolServiceV250	
	createScope
	deleteNetwork
	getNetworkDefinitions
	getNetworksUtilizations
PermanentIpAddressService PROD: https://webservices.swisscom.com/wsg/prod/ippool/PermanentIpAddressServiceV250 TEST: https://webservices.swisscom.com/wsg/isp/ippool/PermanentIpAddressServiceV250	
	getSubscriberIpAddress
	getSubscriberPermanentIpAddressPools
	getSubscriberPossiblePermanentIpAddress
	setSubscriberPermanentIpAddress
	unsetSubscriberPermanentIpAddress
AddressPoolCategoryService PROD: https://webservices.swisscom.com/wsg/prod/ippool/AddressPoolCategoryServiceV250 TEST: https://webservices.swisscom.com/wsg/isp/ippool/AddressPoolCategoryServiceV250	
	getSubscriberSelectionTypes
	setSubscriberSelectionType
DhcpSessionService PROD: https://webservices.swisscom.com/wsg/prod/ippool/DhcpSessionServiceV250 TEST: https://webservices.swisscom.com/wsg/isp/ippool/DhcpSessionServiceV250	
	deactivateSubscriberDhcpSession

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Web-Service	Operation
	reactivateSubscriberDhcpSession
AdvancedReportingAndConfigurationService	
PROD: https://webservices.swisscom.com/wsg/prod/ippool/AdvancedReportingAndConfigurationServiceV250 TEST: https://webservices.swisscom.com/wsg/isp/ippool/AdvancedReportingAndConfigurationServiceV250	
	findSubscriberLIHistory

2.3.2 Older Versions (Deprecated)

The following older web-services are still available although they do not provide the newest functionalities.
Please be aware that with the next major WSG/IP-Pool release (next edition of this document) this deprecated versions will no longer be supported and removed.

Version V240 (ippool_outbound_wsdl_v240.1.zip)

Web-Service	Operation
IpAddressPoolService	
PROD: https://webservices.swisscom.com/wsg/prod/ippool/IpAddressPoolServiceV240 TEST: https://webservices.swisscom.com/wsg/isp/ippool/IpAddressPoolServiceV240	
	createPoolNetwork
	createScope
	deleteNetwork
	getBulkSubscribers
	getNetworkDefinitions
	getNetworksUtilizations
PermanentIpAddressService	
PROD: https://webservices.swisscom.com/wsg/prod/ippool/PermanentIpAddressServiceV240 TEST: https://webservices.swisscom.com/wsg/isp/ippool/PermanentIpAddressServiceV240	
	getSubscriberIpAddress
	getSubscriberPermanentIpAddressPools
	getSubscriberPossiblePermanentIpAddress
	setSubscriberPermanentIpAddress
	unsetSubscriberPermanentIpAddress
AddressPoolCategoryService	
PROD: https://webservices.swisscom.com/wsg/prod/ippool/AddressPoolCategoryServiceV240 TEST: https://webservices.swisscom.com/wsg/isp/ippool/AddressPoolCategoryServiceV240	
	getSubscriberSelectionTypes
	setSubscriberSelectionType
DhcpSessionService	
PROD: https://webservices.swisscom.com/wsg/prod/ippool/DhcpSessionServiceV240 TEST: https://webservices.swisscom.com/wsg/isp/ippool/DhcpSessionServiceV240	
	deactivateSubscriberDhcpSession
	reactivateSubscriberDhcpSession

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Web-Service	Operation
RadiusSessionService PROD: https://webservices.swisscom.com/wsg/prod/ippool/<mark>RadiusSessionServiceV240</mark> TEST: https://webservices.swisscom.com/wsg/isp/ippool/<mark>RadiusSessionServiceV240</mark>	
	terminateSubscriberPppSession
AdvancedReportingAndConfigurationService PROD: https://webservices.swisscom.com/wsg/prod/ippool/<mark>AdvancedReportingAndConfigurationServiceV240</mark> TEST: https://webservices.swisscom.com/wsg/isp/ippool/<mark>AdvancedReportingAndConfigurationServiceV240</mark>	
	findSubscriberLIHistory

2.4   Interface Types and Elements

The interface types and elements are fully described by the associated HTML-based documentation (refer to [3]).

2.4.1   Error Codes

2.4.1.1   'failed' Responses

Following the list of the possible 'failed' responses returned by the IP-Pool-Services (complex-type 'ResponseResult' with 'response-state=failed').

2.4.1.1.1   WSG errors

response-code	response-text
050	Operation failed: Timeout while calling service-provisioning service.
116	Operation failed: Access denied. Not authorized to perform the requested operation.
618	Operation failed: Access denied. Not authorized to perform the requested operation.
572	Operation failed: General error while processing the request.
808	Operation failed: Invalid argument provided.
2101	Operation failed: "NACK" received from service-provisioning service.
2103	Operation failed: The response provided by service-provisioning service is not valid.
2104	Access denied. Operation constraints violated. Reason: {0}
2105	Operation failed: Invalid session / unauthorized action.
2106	Operation failed: Service has been disabled and is not available anymore.

2.4.1.1.2   SPT errors

response-code	response-text
100099	Invalid request
100110	Wrong DSLAM-type '$(dslam-type)' for given technology: '$(session-type)', '$(termination-type)' and '$(access-protocol)'
100111	DSLAM "${hostname}" does not exist in DB.
100200	Vline-ID not found
100201	Invalid session-type, termination-type and access-protocol combination

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response-code	response-text
100203	Invalid service-profile combination
100204	ISP code does not exist
100205	Invalid bandwidth combination for $(service-profile)
100206	Address is not a valid pool/scope address
100207	Network already exists
100208	VRF or loopback doesn't exist
100209	Network address for ISP doesn't exists
100210	Subscriber is not associated with the given ISP
100211	Subscriber does not have termination type 'FWS'
100212	Definition of streaming bandwidth not allowed for VDSL
100213	Fixed IP address '$(fixed-ip-address)' was released
100214	No suitable scope for subscriber with fixed IP address
100215	Selected fixed IP address is not part of available permanent scope
100216	Selected fixed IP address is already in use
100218	Subscriber is assigned to pool2 scope
100219	Subscriber does not have session type 'DHCP'
100221	No suitable scope for subscriber
100222	ISP does not support session type 'DHCP'
100223	Network size is smaller than minimum allowed network size
100224	Network size is greater than maximum allowed network size
100225	Network does not exist
100240 (100209)	ISP is not owner of network
100231	Scope for permanent IP addresses with at least one IP address still assigned to a subscriber
100232	Bandwidth combination or network given for disabled service profile
100233	No bandwidth combination or network was given for enabling service profile
100234 (100214)	No suitable scope with permanent IP addresses is available
100236	No suitable scope for given scope type exists
100238	BRAS must be specified for permanent scope creation
100239	Parsing of '$(operation-name)' request failed
100240	Syntactic validation of message failed: $(parser-error)
100241	SQL query syntactically incorrect
100242	Required parameter '$(parameter-name)' is missing
100243	Invalid parameter '$(parameter-name)'
100244	Named query '$(query-name)' does not exist
100245	Configuration parameter '$(parameter-name)' does not exist for context '$(context)' and ISP '$(isp-code)'
100246	Modification of configuration parameter '$(parameter-name)' for context '$(context)' and ISP '$(isp-code)' not allowed
100247	No MAN assignment for BRAS
100248	Not allowed to create scope of specified type
100249	Invalid value for configuration parameter '$(parameter-name)' in context '$(context)' according to given regex '$(regex)'
100250	Execution of named query '$(query-name)' failed: '$(ORA-ERROR)'
100251	No BRAS port assigned for subscriber '$(vline-id)'

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response-code	response-text
100252	Invalid subscriber phone number
100253	Bandwidth combination or network must not be given for disabling service profile
100254	Modification from '$(current-address-type)/$(current-scope-type)' to '$(new-address-type)/$(new-scope-type)' not allowed.
100255	Network or IP is blocked by IP blacklist
100256	Definition of streaming bandwidth not allowed for disabled profile
100257	Subscriber is in provisional state
100258	ISP does not support PPP@ISP ISAM service
100259	Removing an enabled service not possible
100260	EAI order rejected
100261	Webservice '$(service-operation-name)' not allowed for invoker '$(invoker)'
100262	Named query '$(query-name)' not allowed for invoker '(invoker)'
100263	Missing start or end date
100264	Scope type is not complete
100265	Start date can''t be larger than end date
100266	It is possible to get utilization from only 2 weeks for 'RAW' query type
100267	It is possible to get utilization from only 2 years for 'DAILY' query type
100268	Mismatching DSLAM type for host '${hostname}': request type '${re-questDslamType}' differs from db-type 'dbDslamType'
100270	Queuing of '$(operation-name)' request failed
100500	SPT failed to process request.
100601	Global-time outside of configured archival period.
100600	No matching entry found for ip-address ${ip-address} in LI History table at time ${global-time}.
100602	Ip-Address ${ip-address} does not belong to ISP with ISP-Code ${isp-code}.
100603	CSF marker-code ${marker-code} is not valid.
100604	Maximum duration of findSubscriberInLIHistory exceeded for request with invo-cation-id ${invocation-id}
100605	Configuration parameter '$(parameter-name)' for context '$(context)' and ISP '$(isp-code)' is not longer supported by SPTIL
100606	Maximum of configured thresholds reached
100607	Ip-Address ${ip-address} does not belong to Subscriber with Vline-ID ${vline-id}.
100701	A subscriber with access-id '${access-id}' already exists in SPT.
100702	An access-endpoint with lag "${lag-name}", svlan "${svlan}", cvlan "${cvlan}" and hostname "${bngHostname}" already exists in SPT.
100703	The upstream bandwidth "${upstream}" exceeds the maximal possible value of "${max-upstream}".
100704	The downstream bandwidth "${downstream}" exceeds the maximal possible val-ue of "${max-downstream}".
100705	The BNG with hostname '${hostname}' does not exist in SPT.
100710	A subscriber with access-id '${access-id}' does not exist in SPT.
100711	A subscriber with vline-id '${vline-id}' already exists in SPT.
100712	The ISP with isp-code '${isp-code}' does not support BBCS Fibre service.
100714	The bbcs subscriber with access-id '${access-id}' is already linked with a vline-id.
100715	A subscriber with vline-id '${vline-id}" does not exist in SPT.
100716	A subscriber with vline-id '${vline-id}' is not an All-IP Copper Subscriber.
100717	A subscriber with vline-id '${vline-id}' is not a BBCS-F Subscriber.

response-code	response-text
100723	The minimal upstream bandwidth '${min-upstream}' exceeds the maximal up-stream bandwidth ${max-upstream}
100724	The minimal downstream bandwidth '${min-downstream}' exceeds the maximal downstream bandwidth ${max-downstream}.
100732	No MAC address was found for uesr with vline-id/acess-id '${access/vline-id}'.

2.4.1.2 Technical Exceptions

If SPT returns a TechnicalException, the following general TechnicalException is returned as the "*response*" element of the returned SOAP message:

- *technical-exception-text*:   Operation failed: General error while processing the request.

- *technical-exception-code*:   572

- *technical-exception-component*: WSG