Nordea

Nordea IT
Technology Strategy –
Standard IT Solutions and Technologies

Version:	1.6
Creation Date:	16-05-2016
Release Date:	16-05-2016
Authors:	See Authors in Document Review Section.
Approvers:	See Approvers in Document Review Section.
Function:	Nordea IT Technology Strategy – Standard IT Solutions and Technologies
Description:	This document describes the Technology Standard for Nordea Bank, a.k.a. a list of strategic approved technologies that can be used without exemption from GITAG

This information is owned by Nordea. If you have any questions, please contact esa.marttila@nordea.com.

About this document

This document describes the Technology Standard for Nordea, a.k.a. a list of strategic approved "green" technologies that can be used without exemption from GITAG. Document lists also maintained tactical and back level technologies to Nordea should retire. VDC technologies will added in 2015H2.

File	2016_05_16_Technology_Strategy___IT_solutions_and_technology_Standard_1_6

Who should use this document?

This document is used by Infrastructure Architects and Solution Designers.

Related documents

Further information and clarification on items within this document can be found in the following documents:

Documents		
1	1.4 / 2015-04-02	2014-11-14 Technology Strategy Principles 1.4

Summary of changes

The history of significant changes to this document. Only the most significant changes are described here.

Version	Date	Author	Description of change
1.6	2016-02-16	Sakari Palko, Gösta Andersson, Stefan Lindvald	ECM strategy, and Deltagon support to Group wide
1.5i	2015-10-09	Sakari Palko	OMFT availability added, and confluence colour
1.5	2015-04-02	Sakari Palko	Oracle MFTP included +
1.4	2014-11-14	Sakari Palko, Olli v. Hertzen, Gösta Andersson, Teuvo Hakala, Teppo J	Main changes in Security, end user, business and enterprise platforms
1.3	2013-12-20	Esa Marttila, Tapio Kirjonen, Sakari Palko, Pekka Kanerva	IBM Mainframe System z tactical platform. Domino red platform, IMS colour
1.2 /	2013-06-14	Esa Marttila, Tapio Kirjonen, Mats G Andersson, Sakari Palko Mikko Päivinen	Network, Integration and Platform technology and solution update
1.1 /	2012-02-07	Esa Marttila, Tapio Kirjonen, Mats G Andersson Sakari Palko	Tool landscape changes, removed technologies, update schedule updated

Document Review

This document will be reviewed and updated as defined below:

- To correct or clarify the presentation of information
- Following an organizational change
- Following feedback from an annual review
- To meet changes in purpose or scope

Updates that are for presentation purposes are reviewed approved and authorised for release by the document owner.

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Distribution

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Table of Content

1 Introduction

Nordea uses various technologies to automate and support business processes. The purpose with the Technology Strategy is to provide direction for IT for the best technology choices to support business with most competitive IT services, while keeping the cost and complexity under control and timely renew technologies.

The term 'Technology' in the Technology Strategy is used in a broad sense. It addresses tools, systems, platforms, solutions and related implementation processes in Nordea supporting production, manipulation, storing, communication and distribution of information, all of which is essential for Nordea in providing IT services to the business.

Nordea Technology Strategy consists of the following documents:

- *Technology Strategy - Principles*
- *Technology Strategy – Standard IT Solutions and Technologies (this documens)*
- *Technology Strategy Summary and technology area specific detailed strategies*

While the *Technology strategy principles and Technology area specific strategy* documents define the desired direction and target state, the *Standard IT solutions and technologies* document outlines the best suited technologies for Nordea. It defines what technologies best fulfil economical, technical and security requirements. This document lists those mandatory to use technologies. The technologies are classified strategic, tactical or back level technology in the document. Strategic IT Solution and Technologies constitutes a governance tool to ensure that suppliers adhere to the Nordea Technology strategy. Operational details are set up and implemented through supplier specific contracts, e.g. Nordic Processor (NP) contract Schedule F and H. e.g. supported software versions.

The *Technology Strategy – Standard IT Solutions and Technologies* scopes and structures the current and future group-wide and cross business area IT solutions and the respective supporting technologies, and points at the standard IT technologies. The document is not an inventory but a deliberate selection conducted by subject matter experts and responsible persons for the respective areas in IT. The purpose is to ensure that decisions with potential group-wide impact in one area are communicated, coordinated and made available for other areas to avoid development of competing or overlapping solutions.

The strategic direction for the content herein is a result of several elements:

- Current products/process and the underlying IT support of those
- Business ambitions, as outlined in business and business IT strategies
- Nordea's need for managing and reducing complexity
- Nordea's need for ensuring cost competitiveness
- Technology trends and innovation opportunities in the market

The *Technology Strategy – Standard IT Solutions and Technologies* is the central source of reference to be used in development activities when selecting technology. Using another technology requires an exemption from Group ITAG. The target audience is Business Chief Information Officers, IT Architects and Project Managers. The focus of the strategy is on future development, not rectifying existing solutions.

The Technology Strategy is owner and maintained by Solution and Technical Architecture/Strategy, Architecture & Methodology in Group IT in close cooperation with the Business IT Architects and Infrastructure & Operations Technical Design Authority.

1.1 Update Schedule

Chapter	To be updated by	Responsible
2.1 End User Technology	2015H2	Group IT / Collaboration and User Platforms
2.2 Business Platforms	2016H1	Group IT / ITSAM Architecture
2.3 Common Enterprise platforms	2015H2	Group IT / ITSAM Architecture
2.4 Business Process Management	2016H1	Group IT / ITSAM Architecture
2.5 Data Management	2016H1	Group IT / ITSAM Architecture
2.6 Integration	2016H1	Group IT / ITSAM Architecture
2.7 Application Platforms	2016H1	Group IT / ITSAM Architecture
2.7.1 Mobile Platforms	2016H1	Group IT / ITSAM Architecture
2.8 Development Tools	2016H2	Group IT / ITSAM / Tools and Methods
2.9 Security Technology	2016H2	Group IT / Oper. Secur. and Sec. Architecture
2.10 Network	2016H2	Group IT / Technical Architecture
2.11 Operations Support	2016H2	Group IT / Technical Architecture

Note: Bi-annual updates will be replaced gradually with an online document. Information will be stored into MegaSuite architecture tool and available as report in the Intranet.

2 Standard IT solutions and technologies

This chapter presents existing, already established and matured strategic technologies that are MANDATORY to use in Nordea, as well as future solutions and technologies that are only partly implemented or future solutions Nordea sees a need for, and intends to implement in a three to five year perspective. Some tactical solutions are mentioned in few areas where appropriate (marked with *Italics*). Utilisation of any of the tactical solutions or technologies in IT projects is allowed in special circumstances but requires an architectural evaluation and must be approved by Group ITAG. Also use of non-standard technologies and solution must be approved Group ITAG.

The overall objective is to govern these IT solutions and technologies to reduce costs, and reduce IT complexity. The purpose is also to ensure that decisions taken in one area are communicated and made available for other areas to avoid redundancies and the developing of competing solutions.

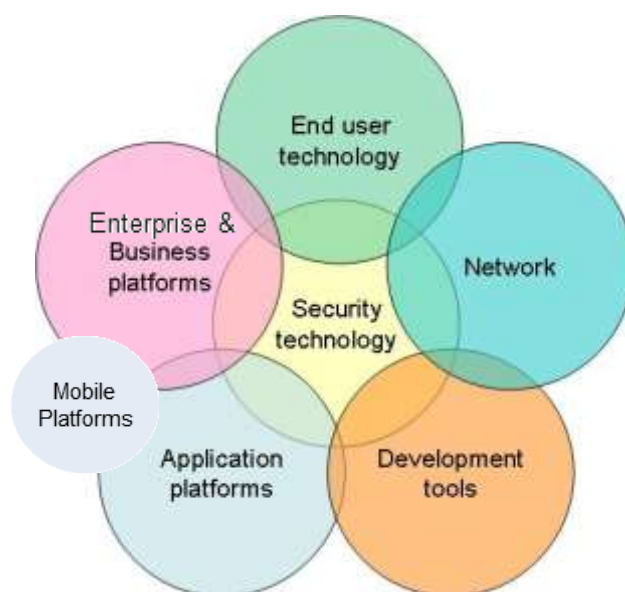The following categorization is used within this document[1]:

Figure 1: IT solution categories

This structure is also illustrated in the technology landscape (see figure 2), combining Nordea key technology and Gartner infrastructure service model for banks.

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[1] Note: Mobile platforms presented in a separate subchapter due growing importance
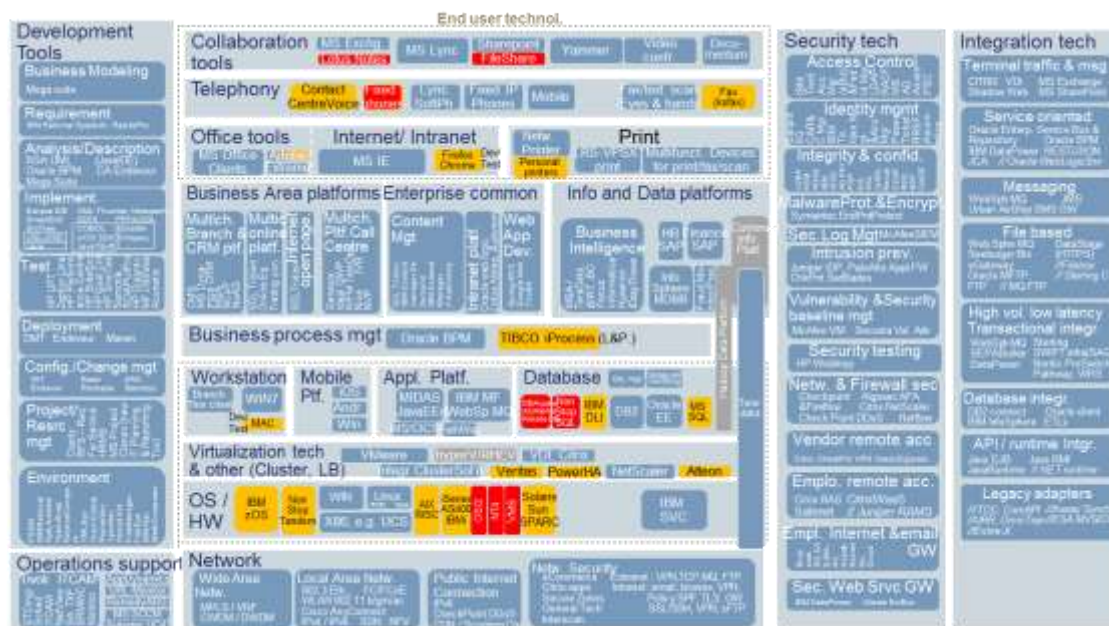
*Figure 2. Nordea technologies mapped to in Gartner's Bank infrastructure service model
(grey indicates a new technology to evaluate; blue strategic, yellow tactical and red to retire).*

Instructions for reading tables

Strategic colour: Green Strategic technology for Nordea that will be supported e.g. at least next three to five years

Yellow New deployed or maintained technology for tactical purposes. Usage requires GITAG exemption.

Red Back-level technology is to be retired; support will discontinue.

Available: X Current supported technology / solution (see Tech. lifecycle)

Blank Technology is not currently available / not possible to order

Available in the future X Nordea strategy is to continue using the technology for new application developments or to introduce a new technology

Blank Technology Nordea shall not use in the future

Tech.Lifecycle: Yellow Lifecycle Phase 2 new arising technology relevant for Nordea, but technology has still high risks. Use requires GITAG exemption.

Green Lifecycle phase 3 a mainstream phase, expected supported at least next three to five years

Amber Lifecycle Phase 4 Technology is maintained, but retirement plans should be made. Technology may be ramped down during or after the next three to five years. Use requires GITAG exemption.

Red Lifecycle Phase 5 Back-level technology Nordea strategy is to retire and discontinue the support. Products using particular technology must have a budgeted exit plan and risk mitigation plan.

// Italics Italics and // indicate technology status change to yellow/amber/red.

TBD Under clarification or product has not been selected yet

2.1 End-user technology

With end-user technology is meant technology necessary and available to work in Nordea, i.e. the Nordea end-user workbench.

Name of the IT solution/technology and strategic colour	Description / usage / comments	Avail-able/life-cycle	Availa-ble in future
Workstation			
Next Generation End-User Platform	Microsoft Windows 7 based end-user workstation	X Green	X
// Mac	*// Mac workstations are only for development and testing purposes. Note: Nordea internal application do not support this workstation type*	*X Yellow Ph.2*	*X*
// CLIP2	*Microsoft XP based end-user workstation // Win 7 will replace CLIP2 in 2014.*	*Red Ph. 5*	
Thin client	Branch Office thin client devices *// HP or Fujitsu models used*	X Green	X
Collaboration tools			
MS Exchange	Mail server	X Green	X
MS Lync	Video conferencing, net meeting, instant messaging, audio call and audio and video conferencing and net meeting, video call, presence and location information	X Green	X
//MS Communicator Client	*Instant messaging, audio call and conferencing, video call, presence and location information // replaced with MS Lync 2012Q2-onwards*	*Red Ph. 5*	
//MS LiveMeeting client	*Video conferencing, net meeting // replaced with MS Lync Q2 2012 onwards*	*Red Ph. 5*	
MS Yammer	Social collaboration and networking tool Note: certain Yammer features are disabled	X Green	X
MS SharePoint	Browser-based collaboration platform for social networking, blogs, wikis, document management for teams	X Green	X
Collaboration / E-communication platforms			
Microsoft Lync Server	Lync will replace MS Live first and MOCS later as the implementation proceeds	X Green	X
// Microsoft Office Communications Server	*// Microsoft Office Communications Server, Office Communicator and Live Meeting - replaced by MS Lync server Q1 2012 onwards*	*Red Ph. 5*	
Office tools and clients			
MS Office	Office suite of interrelated desktop applications (incl. Outlook, and Lync client in the future)	X Green	X

Name of the IT solution/technology and strategic colour	Description / usage / comments	Avail-able/life-cycle	Availa-ble in future
Adobe PDF forms: Adobe LifeCycle	*// Manual form fill-in solution, currently in use in Private Loan services FI and centralized private Loan services in Nordea (Note: do not mix this with Adobe for PDF docs)*	*X Amber Ph. 4*	*X*
//Word Form templates	*// Mallmotor in Norway. Word templates stored on file servers across Nordea.*	*Red Ph. 5*	
//WordPerfect templates	*// UniEx and UniText in Denmark (Transformed by Tellos2 programme)*	*Red Ph. 5*	
//Jetform	*// Mainframe print client in SE*	*Red Ph. 5*	
HP Exstream Designer and Live editor	Replacement solution for templates and solution for document composition	X Green	X
Reflection (Attachmate)	Mainframe access client (3270 emulator)	X Green	X
Internet and Intranet access			
MS Internet Explorer Browser	Main browser choice	X Green	X
FireFox Browser Chrome	*For developer needs for testing only. Most Nordea intranet application do not support Firefox or Chrome or other browsers*	*X Yellow Ph.2*	*X*
Remote access			
Juniper RAMS,	Solution to access Nordea network from outside Nordea premises over public phone or Internet connections. Includes VPN client, Nordea internal development and a certificate/ token based authentication	X Green	X
Citrix/ WaaS	*VDI based remote access solution for Workstation as a Service (WaaS), new arising technology*	*X Yellow Ph.2*	*X*
Phone			
Lync Client Soft phone on Win7	Lync client base phone service over desktop	X Green	X
	Lync integration to PSTN gateway enables phone calls from PC to standard phones and vice versa	X Green	X
Lync IP Phone	Common area phones, e.g. for Branch offices	X Green	X
TBD	Fixed IP phones		X
// Fixed phones (Nortel, Aastra)	*// Traditional fixed desktop and deck office phones are maintained while the new digital and PC based phone solutions are developed*	*X Amber Ph.4*	*Red Ph. 5*
Mobile phones			

Name of the IT solution/technology and strategic colour	Description / usage / comments	Avail-able/life-cycle	Availa-ble in future
	Integration of Lync to PSTN Gateway enables calls from PC to mobile phones and vice versa	X Green	X
TBD	VOIP over Mobile Data and WLAN		X
Faxes			
IP Fax Top Call		X Green	X
// Dedicated hardware	*// Solutions maintained for tactical use*	*X Amber Ph. 4*	TBD
Printers and multi-function devices			
Network printers	Preference is multifunction devices (print, fax, scan), and direct printing (server-less printing)	X Green	X
// Personal or directly connected (RS-232, parallel)	*// Solutions maintained for tactical use*	*X Amber Ph.4*	*TBD*
// LRS - VPS VPS/TCPIP VPS/PCL	*// Mainframe components to drive network printers*	*X Amber Ph.4*	*X*
LRS - VPSX	Workstation, IBM mainframe and NonStop print and printer manager.	X Green	X

2.2 Business platforms

This category of IT solutions and technologies contains platforms and solutions, providing functionality and business logic across business areas and functions.

Name of the IT solution/technology and strategic colour	Description / usage / comments	Avail-able/life-cycle	Availa-ble in future
Multi-Channel Platforms – Branch Sales & CRM			
CMS: In-house developed Java / Rich client	Customer Management System – Operational CRM for branch use	X Green	X
Microsoft Dynamics CRM	CRM used by Corporate and Institutional Banking	X Green	X
MSA; In-house Data Warehouse platform on TeraData	Marketing and sales leads automation – Analytical CRM.	X Green	X
NCuP	Customer Programme: Nordic Retail Common customer scoring engine (Gold/silver/bronze)	X Green	X

Name of the IT solution/technology and strategic colour	Description / usage / comments	Avail-able/life-cycle	Availa-ble in future
NoAG	Nordea Advisory Guide – PBA support solution e.g. for 360° customer meetings	X Green	X
Multi Channel Platforms – Online			
// Tieto MCP	*// Retail Multi Channel Platform (tactical) Note: MCP will be migrated to SDL Tridion in IBTA, but use will continue in Corp. NetBanks at least the next 3 years*	*X Red Ph.5*	*X*
OSIA: <components>	OSIA – Online Savings Investment and Advice in Retail Banking	X Green	X
// WCM / WEM Documentum	*// Used for web content management / Web Experience Management in netbanks; will be replaced by SDL Tridion //Note: This concerns only netbank use !!!, Documentum will be in use for other documents*	*X Red Ph.5*	*Red Ph.5*
Pexip	*Common customer collaboration platform using Lync(enabled through netbanks; asset management / DRM, private netbank) // Note: Skype future capability will cover this*	*X Amber Ph. 4*	*X*
Nordea open pages on Internet			
DWA; Dynamic Web Applications	Open page platform used by Retail banking *Note: Earlier name was Consolidated Open Page Platform (COP) //Open Pages will be migrated to SDL Tridion*	X *Amber Ph.4*	X *Amber Ph.4*
Nordea Intranet platform			
Oracle WebLogic Portal	*Intranet Portal platform*	X Green	*X Amber Ph. 4*
Autonomy	*Main enterprise search tool for intranet and open pages // ECM ITAG decided to continue using Autonomy as the search tool in 2015Q4*	*X Green*	*X*
// Google Search	*// Search tool used in DK / Capital Markets, to be retired – trials not successful*	*X Red*	
// Publishing	*// Current used tactical tools: Lotus Domino (publishing)*	*Red Ph.5*	
// OP WCMS (Mondo)	*// Intranet editing tool. Strategy is to replace it gradually with SDL Tridion*	*X Red Ph.5*	
Multi Channel Platforms – Contact Centre			
Genesys	Call Routing tool.	X Green	X
Ideal Systems, GWP	Desktop	X Green	X
WFM - TeleOpti	Work Force Management	X	X

Name of the IT solution/technology and strategic colour	Description / usage / comments	Avail-able/life-cycle	Availa-ble in future
		Green	
Nice	Call Recording	X Green	X
IVR	Interactive voice reply	X Green	X
New Voice Platform	PSTN Gateway integration for Lync (Q2 2012-) enabling standard and mobile phone calls to Lync meetings and vice versa (VIR solution)	X Green	X

2.3 Common Enterprise Platforms

Name of the IT solution/technology and strategic colour	Description / usage / comments	Avail-able/life-cycle	Availa-ble in future
Media Input Management			
XBound	Scanning and image/text recognition solution for all kinds of digital documents, text recognition, categorization, cla. Server based.	X Green	X
// Eyes and Hands	// Scanning and image/text recognition solution. Strategy is to migrate to XBound due to solution limitations, e.g. E&H scanner had to be physically connected to workstations	X Amber Ph.4	X
// Kofax	// Scanning and image/text recognition solution	X Amber Ph.4	X
Vaggan / eCradle	Document scanning and email flow solution, and delivery of digital documents and metadata from LPS to eCradle. This includes local scanning at Lexmark MFD. Limitations: cannot recognize metadata from the text, but needs manual entry	X Green	X
HP Extreme Designer	Preferred Document design and development tool for document composition, information collection, document formatting and distribution // Replaces Stream serve, adobe designer, word form templates, word perfect templates, Elixir.	X Green	X
Enterprise Content Management			
SDL Tridion	Web content management. Will be used for open pages, intranet, netbanks, and other online service	X Green	X
ECM Documentum	Document management and document workflows	X Green	X

Name of the IT solution/technology and strategic colour	Description / usage / comments	Avail-able/life-cycle	Availa-ble in future
IBM Content manager On Demand	Archiving. Batch archiving of multi-document files *//Migration from Mainframe to Linux suggested*	X Green	X
IBM Content Manager	*Online and batch archiving of single documents* *//Migration from Mainframe to Linux suggested*	X Green	X
IBM Content Manager on Demand	Report management (will replace e.g. Control-D and IAFC) *//Migration from Mainframe to Linux suggested*	X Green	X
// Control–D NO	*// Elarkivet- Report archive in NO* *Migrate to Content Mgr On Demand*	*Red* *Ph. 5*	
// Control-D SE	*// Rapportrutinen - Report repository in SE* *Migrate to Content Mgr On Demand*	*Red* *Ph. 5*	
// IAFC SE	*// Document archive in SE* *Migrate to Content Mgr On Demand*	*Red* *Ph. 5*	
// IAFC DK	*// Document archive in DK* *Migrate to Content Mgr On Demand*	*Red* *Ph. 5*	
// Contempus NO	*// Contract archive / Kontraktsarkivet* *Migrate to Content Mgr*	*Red* *Ph. 5*	
// TulseFI	*// Finnish report archieve , migration ongoing to Content Mgr On Demand*	*Red* *Ph.5*	
// ASG Mobius ViewDirect	*// Archive Corporate Customer* *Migrate to Content Mgr On Demand*	*Red* *Ph.5*	
NetShare / eBoks	Customer copies of documents and digital signature services	X Green	X
TBD	*Digital Asset management. Platform to register the document lifecycle, retention, and legal status.*		*X* *Yellow* *Ph. 2*
Autonomy	Intelligent search for channels for large user base Strategic solution, used for the time being	X Green Ph.3	X
Business Intelligence and Analytics			
MSA; In-house Data Warehouse platform on TeraData	Marketing and sales leads automation – Analytical CRM.	X Green	X
Teradata Enterprise Data Warehouse	TeraData is the preferred future EDW solution	X Green	X
Web application development			
Spring MVC	For both internal and external large and small web applications	X Green	X
Google Web Tool Kit (GWT)	For highly efficient, responsive and interactive web applications	X Green	X

2.4 Business Process Management

Name of the IT solution/technology and strategic colour	Description / usage / comments	Avail-able/life-cycle	Availa-ble in future
BPM			
Oracle BPM	Business process management modelling and execution solution for process optimisation	X Green	X
// Tibco iProcess	*Workflow and process modelling // will be replaced by Oracle BPM*	*X Amber Ph.4*	*Red Ph.5*
TBD	*// Case management (Case sensitive workflow, supporting processes with manual and automatic steps)*		*X*

2.5 Master Data Management

Name of the IT solution/technology and strategic colour	Description / usage / comments	Avail-able/life-cycle	Availa-ble in future
Group Wide Master Data			
IBM InfoSphere MDM8	Storing customer and product information; product management and reporting	X Green	X
IBM InfoSphere Metadex	CDW data lineage and CDW glossary data management solution for GCF needs *Note: Rochade is the Nordea Group wide IT metadata management solution.*	X Green	X
Nordea Finance SAP	Financial master data , incl. base structures i.e. company, chart of accounts, etc.	X Green	X
Nordea HR SAP	Employee master data, incl. organisational management information of employees	X Green	X

2.6 Integration

System integration is about sharing of data and business processes among any connected application or data sources, in or outside the enterprise. Depending on the specific purpose Nordea has defined standardized patterns for integration[2]. Nordea Standard patterns defined in Nordea Integration technology strategy are

1. Terminal traffic (incl. UI integrations), and messaging
2. Service Oriented

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[2] *Note: Inter-domain standards and patterns will be maintained and supported by the ICC (Integration Competency Centre)*

3. Message Oriented
4. File Oriented
5. Transactional integrations
6. Database integrations and Replication
7. Java APIs
8. Legacy adapters

Use cases for integration patterns and related technologies are detailed in the *Integration technology strategy.*

2.6.1 Terminal traffic and terminal messaging

Name of the IT solution/technology and strategic colour	Description / usage / comments	Avail-able/life-cycle	Availa-ble in future
Internal integration – terminal traffic and messages			
Citrix Virtual Desktop	Remote access to Windows applications (transition architecture solution for thick clients)	X Green	X
Microsoft Exchange	Access to mail system	X Green	X
Microsoft SharePoint	Nordea collaboration workspace solution	X Green	X
Shadow Web	BA specific web browser access to 3270 based applications in Postgirot	X Green	X
External integration – terminal traffic and messages			
Citrix Virtual Desktop	Used for terminal traffic to Nordea partners, e.g. Ext. Development Centre (over VPN tunnel)	X Green	X

2.6.2 Service Oriented

Name of the IT solution/technology and strategic colour	Description / usage / comments	Avail-able/life-cycle	Availa-ble in future
Service Mediation / Service oriented architecture (SOA) – Internal and External			
Oracle Enterprise Service Bus	SOA integration to backbone and services layer, e.g. front-end integration for all common (not country specific) services	X Green	X
Oracle BPM	Business process management modelling and execution solution for process optimisation	X Green	X
// Oracle Enterprise Repository	// Web Services management repository (see 2.7) - not supported in VDC, replaced w/ MegaSuite	X Red	
// Oracle Service Registry	// Service registry governance tool for developing & modifying applications (earlier BEA AquaLogic Registry). Not in use -> removing	Red Ph.5	

Name of the IT solution/technology and strategic colour	Description / usage / comments	Avail-able/life-cycle	Availa-ble in future
IBM Data Power	Web services gateway, used as a gateway to handle security for int./external traffic	X Green	X
REST/JSON	Mobile platform and Web Application integrations, both internal and external integrations	X Green	X
JCA	Java Connectivity Architecture	X Green	X
// Oracle WebLogic Server (WLS)	*// Java Application Server and runtime for FM platform; internal Nordea Integration Layer NIL*	*X Amber Ph.4*	*Red Ph.5*

2.6.3 Messaging Oriented

Name of the IT solution/technology and strategic colour	Description / usage / comments	Avail-able/life-cycle	Availa-ble in future
Messaging			
WebSphere MQ	Can be used for all platforms and applications	X Green	X
Java Messaging Service (JMS)	Java Message Oriented Middleware API for sending messages between two or more clients Note: Not for cross domain integrations, but can be used for connecting to MQ (for cross domain)	X Green	X
Urban Airship	Web Services gateway, used as a gateway to send and receive SMS (external) *Note: Nordea internal interface remains the same*	X Green	X

2.6.4 File Oriented (File/Batch)

Name of the IT solution/technology and strategic colour	Description / usage / comments	Avail-able/life-cycle	Availa-ble in future
File and Batch – Internal and External - data from one platform to another			
WebSphere MQ	Can be used for all platforms and applications	X Green	X
Oracle MFTP	Preferred managed file transfer technology for external and internal integrations. *//* note: Internal use is in implementation currently. Please contact ICC*	Internal: X* Green ---------- External N/A	X --------- X

Name of the IT solution/technology and strategic colour	Description / usage / comments	Avail-able/life -cycle	Availa-ble in future
Seeburger BIS	External file transfer for Corporate customers in Wholesale	X Green	X
FTP	Basic file integration for simple or large bulk file integrations. *Note: secure FTP for external transfer with security gateway, e.g. DataPower.*	X Green	X
// IBM Sterling Connect:Direct	*Unscheduled delivery or retrieval of files to/from partners, or internally between mainframe and midrange servers.*	*X Amber Ph.4*	*TBD*
Corporate eGateway (ext)	Common solution for processing corporate custo-mers payment files and transaction reporting for all Nordea countries //*Seeburger will replace later*	X Green	X
// Filebox (ext)	*Used with corporate customers, Seeburger will replace FileBox & other similar local systems*	*X Amber Ph.4*	*Red Ph.5*
Corporate Netbank file transfer with Seeburger (ext)	Portal solution for corporate customer to manually manage their file transfers. Recommendation is to use Seeburger BIS for file management.	*X Yellow Ph.2*	X
// Corporate Netbank file transfer with Filebox (ext)	*//Portal solution for corporate customer to manually manage their file transfers. Uses Filebox for file management. Note: Seeburger will replace FileBox*	*X Amber Ph.4*	*Red Ph.5*
Netview FTP (int)	For distribution as part of scheduled operations, mainly to/from IBM mainframe	X Green	X
// WebSphere MQ File Transfer Edition	*// Managed file transfer between different platforms. Not in use --> not recommended*	*X Amber Ph.4*	*Red Ph.5*
DataStage	*Emerging common technology for ETL / data* integrations for mobile and web integrations	*X Yellow Ph.2*	*X*

Note: Scanning solutions have been moved to Enterprise Common Platforms.

2.6.5 High volume low latency Transactional integrations

Name of the IT solution/technology and strategic colour	Description / usage / comments	Avail-able/life -cycle	Availa-ble in future
Transactional Integrations			
IBM DataPower	Web services gateway, used as a gateway to handle security for external traffic	X Green	X
WebSphere MQ	Can be used for all platforms and applications, e.g. for asynchronous integrations betw.	X Green	X

Name of the IT solution/technology and strategic colour	Description / usage / comments	Avail-able/life-cycle	Availa-ble in future
	platforms		
SEPA Bulker	European Payment Area specific transactional integration	X Green	X
SWIFT Network Infrastructure	Covers most of the financial companies worldwide incl. ProSwitch for messaging with SWIFTNet connectivity and EBA	X Green	X
Nordic ProSwitch Middleware (Tieto)	Connecting Business Applications sending FIN –messages to SwiftNet. Technology is supported by Wholesale	X Green	X
//Local ProSwitches, Tandem Swift Middleware and MERVA	*// Local technologies replaced by Nordic ProSwitch*	*Red*	
// IBM Sterling Connect:Direct (ext)	*Unscheduled delivery or retrieval of files to/from partners, or internally between mainframe and midrange servers*	*X Amber Ph.4*	*TBD*

2.6.6 Database integrations

Name of the IT solution/technology and strategic colour	Description / usage / comments	Avail-able/life-cycle	Availa-ble in future
Database integrations			
DB2 Connect	Remote access to mainframe DB2 database	X Green	X
Oracle client	Remote access to databases in Capital Markets	X Green	X

2.6.7 Java APIs

Name of the IT solution/technology and strategic colour	Description / usage / comments	Avail-able/life-cycle	Availa-ble in future
Java APIs			
Remote Method Invocation (RMI)	Java API for remote procedural calls in Java applications between front-end and backend	X Green	X
Enteprise Java Beans (EJB)	Java API for messaging processing between local and remote Java Virtual Machines	X Green	X
IMS+MQ, IMS+TCP/IP, TCP/IP, CICS+URR, JCA, OMNITRAN	Connectivity between Midas (Java) & Mainframe 1. IMS over MQ 2. IMS over TCP/IP 3. Tandem over TCP/IP	X	X

Name of the IT solution/technology and strategic colour	Description / usage / comments	Avail-able/life-cycle	Availa-ble in future
	4. CICS connection with URR (Nordea in-house) java library (TCP/IP) 5. JCA connectors 6. OMNITRAN connection over MQ		
JMS	see Integration / Messaging	X Green	X

2.6.8 Legacy adapters and integrations

Name of the IT solution/technology and strategic colour	Description / usage / comments	Avail-able/life-cycle	Availa-ble in future
Internal integration – M2M transactions & legacy extensions / traffic with limited data sizes			
// ITOC	// Connectivity to IMS mainframe in Sweden	X Amber Ph.4	X
// ComAPI	// Connectivity to IMS mainframe and Tandem in Finland	X Amber Ph.4	X
// URR	// Connectivity to CICS and Tandem in Denmark	X Amber Ph.4	X
// Omnitran	// Connectivity to IMS mainframe in Norway	X Amber Ph.4	X
//Entire-X	// BA specific integration in Nordea Life	X Amber Ph.4	X
//Axway Synchrony Integrator	// BA specific integration in Cash Management, to handle EDIFACT traffic	X Amber Ph.4	X
JCA	Java Connectivity Architecture // To be used instead of the above mentioned legacy adapters by developers	X Green	X

2.7 Application platforms

Application platforms are development environments where Nordea IT solutions are running. Based on where the IT solutions are developed – in-house or purchased from external suppliers – different application platforms are preferred. The choice of platforms for in-house development is determined by the development and maintenance capabilities of the bank. The

same platforms should preferably be used for commercial off-the-shelf solutions but to accommodate Nordea business needs, some alternative application platforms are available for such commercial off-the-shelf solutions. Nordea open source strategy for application platforms is still open excluding Java and Linux.

Name of the IT solution/technology and strategic colour	Description / usage / comments	Avail-able/life-cycle	Availa-ble in future
Midas – the consolidated system platform for Java applications			
Java Enterprise Edition	Strategic technology for all application development (not limited to MIDAS only!)	X Green	X
Oracle Fusion Middleware	Including WebLogic Suite, WebCenter Suite, BPM Suite, SOA Suite.	X Green	X
// Tomcat, and Jetty	// Open source alternative for WebLogic, new arising technologies for test/development needs	X Yellow Ph.2	X Green
LogI	Logging Framework for first line support: audit, error logs, security logs…	X Green	X
Splunk>	Log management tool: more detailed for 2nd line support	X Green	X
Mainframe			
// IBM Mainframe	// Mainframe is tactical platform to maintain. Nordea mainframe capacity demand reduces when new Linux based Core Banking Platform will be introduced. Mainframe core capabilities are transactional processing and databases. Software environment will be standardized. Nordea has four (4) country specific mainframes and consolidation will be analysed. Application quality & controlled use of resources is needed.	X Amber Ph.4	X Amber Ph.4
COBOL	Programming language on mainframe.	X Green	X
CICS	Transaction processing monitor	X Green	X
IMS	Transaction processing monitor used on IBM Mainframe. // Note: to align with CICS use changed to green	X Green	X
Websphere MQ	Asynchronous communication	X Green	X
// HP NonStop	// Platform maintained. Not preferred platform for new development.	X Amber Ph.4	X Amber Ph.4
Databases			
DB2	Database to be used on IBM Mainframe. Database to be used on midrange – UNIX / Intel	X Green	X
Oracle Database EE	Database to be used on midrange – UNIX / Intel	X	X

Name of the IT solution/technology and strategic colour	Description / usage / comments	Avail-able/life-cycle	Availa-ble in future
		Green	
// MySQL	*Open source alternative database that can be only used as a part of COTS solutions.*	*X Yellow Ph.2*	*X TBD*
TBD	No-SQL database for non-structural data *// Note: piloting ong. for Cloudera's Hadoop*		X TBD
// MS SQL Server	*// Platform maintained for tactical reasons.*	*X Amber Ph.4*	*X Amber Ph.4*
// DL1	*// Platform used on IBM Mainframe, only maintained for tactical reasons. Not preferred platform for new development.*	*X Amber Ph.4*	*TBD*
// NonStop SQL	*// Platform used on HP NonStop Mainframe, only maintained for tactical reasons. Not preferred platform for new development.*	*X Amber Ph.4*	*X Amber Ph.4*
// Adabas	*// Platform used on IBM Mainframe. No new developments, to be retired/ramped-down.*	*X Red Ph.5*	
Alternative platforms for commercial off-the-shelf solutions only			
// AIX	*// Tactical proprietary OS platform / --> migrate to Linux.*	*X Amber Ph.4*	*X Red Ph. 5*
Linux: RHEL, SUSE	Strategic OS platform on x86	X Green	X
// Sun Solaris	*// For Investment management and trading solutions // Tactical --> migrate to Linux*	*X Amber Ph.4*	*Red Ph. 5*
Windows	Strategic OS platform Windows / Windows Server on x86	X Green	X
// IBM iSeries (AS400)	*// Platform is maintained for IU needs. No new developments // --> migrate to Linux*	*X Amber Ph.4*	*Red Ph. 5*
// OS/2	*// Legacy platform used for Danish banking only, Technology to be ramped down/retired.*	*Red Ph.5*	
Supporting technologies for platforms			
VMware	Strategic server virtualization technology	X Green	X
// Hyper-V RHEV	*// Runner-up virtualization technologies for Windows and Linux*		*X Yellow Ph 2.*
Application integrated cluster solutions	Preferred cluster solution	X Green	X

Name of the IT solution/technology and strategic colour	Description / usage / comments	Avail-able/life-cycle	Availa-ble in future
//Veritas	*//High end cluster solutions primarily for Solaris/Sparc (OS level cluster solution)*	*X Yellow Ph.2*	*X*
// IBM Power HA	*// Cluster solution for AIX/IBM i platforms (OS level cluster solution)*	*X Amber Ph.4*	*X*
// Microsoft cluster solution	*// Microsoft cluster solution for Windows Servers (OS level cluster solution) for Win*	*X Amber Ph.4*	*X*
Citrix NetScaler	Load balancer solution supporting virtualization	X Green	X
// F5	*// Load balancer solution supporting virtualization. Maintained for tactical purposes*	*X Amber Ph.4*	*X Red Ph.5*
// Alteon	*// Load balancer solution supporting virtualization. Maintained for tactical purposes*	*X Amber Ph.4*	*X Amber Ph.4*

Note: Application owner is responsible for ensuring timely migrations to new supported application platforms. See Technology lifecycle management for details.

2.7.1 Mobile Platforms

This chapter list strategic mobile device platforms to support in development for *external customer applications*. One should note that there are multiple platform versions of those main platforms in use in the market and will consume more development resources.

Name of the IT solution/technology and strategic colour	Description / usage / comments	Avail-able/life-cycle	Availa-ble in future
For External customer use			
Apple iOS	Strategic mobile platform to reach end consumers	X Green	X
Google Android	Strategic mobile platform to reach end consumers	X Green	X
Microsoft Windows Mobile	Strategic runner-up mobile platform to reach end consumers	X Green	X

2.8 Development tools

This chapter presents the approved common development tools and technologies for software development in Nordea. The limitations regarding the variety of development tools are related

to cost, compatibility, maintainability, competence, integration and security considerations. The tools and technologies are structured along the Nordea Software Development Process (SDP) disciplines. Nordea continues to change tooling to reach the tool target picture, and renew tools for Thin clients/ Front End technology needs.
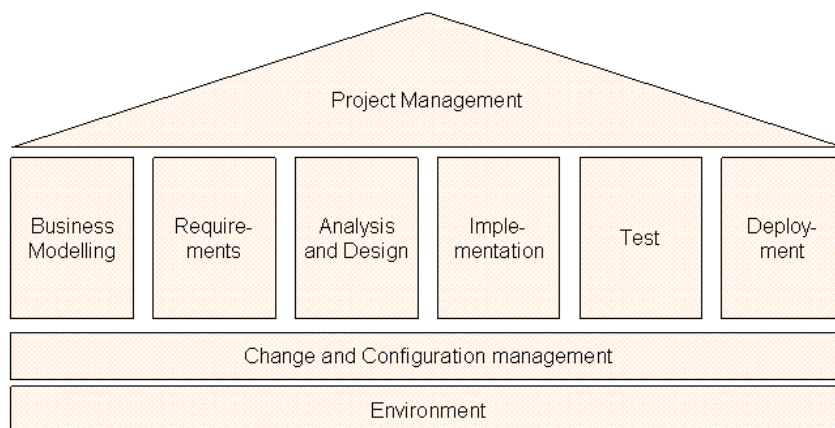

Figure 2: SDP dicipline house

Name of the IT solution/technology and strategic colour	Description / usage / comments	Avail-able/life-cycle	Availa-ble in future
Business Modelling			
MEGA Suite	Architecture modelling tool MEGA	X Green	X
//IBM Rational System Architect	*// Business planning and analysis – use of tool ending*	*Red*	Red
Requirements			
IBM Rational RequisitePro	Requirements management	X Green	X
IBM Rational Software Architect (RSA)	UML modelling	X Green	X
Analysis and Design			
IBM Rational Software Architect	UML Modelling and java development IDE (reverse engineering)	X Green	X
Oracle BPM	Business process management	X Green	X
Implementation			
Eclipse IDE	Open Source Java IDE to be used on Midas platform	X Green	X
XML Thunder	IBM Mainframe xml/COBOL	X	X

Name of the IT solution/technology and strategic colour	Description / usage / comments	Avail-able/life-cycle	Availa-ble in future
		Green	
SmartEdit	IBM Mainframe editor	X Green	X
SDFII	IBM Mainframe screen editor	X Green	X
PPFA/OGL	*Basic print development tool for mainframe // Gradually replaced with HP Extreme*	*X Amber*	*X*
NotePad++	Text editor	X Green	X
TortoiseGit	GUI interface for GIT	X Green	X
Test			
HP Quality Center	Test management / Defect management	X Green	X
Semmle	Source code analysing	X TBD	X
HP Service Tester	Web Service testing	X Green	X
SOAP UI Pro	Web service testing	X Green	X
HP UFT	Automated functional testing // Earlier: HP Quick Test Professional (QTP)	X Green	X
HP Diagnotics	Java code analysis	X Green	X
Strobe	Performance test and analysis on IBM Mainframe	X Green	X
Zephyr	Test management tool in Jira	X Green	X
HP Performance Centre	Performance testing tool	X Green	X
HP Site Scope	Test Monitoring tool	X Green	X
// WebInspect	*Security test / application scanning tool for web applications // replaced by Acunetix*	*Red Ph.5*	
// DevInspect	*Security test / code scanning tool // replaced by Acunetix*	*Red Ph.5*	
Acunetix	Security test / application / code scanning tool for web and other applications	X Green	X
TBD	Profiling, desensitising and cleansing test data		X
Deployment			
Deployment Management Tool	Deployment	X Green	X

Name of the IT solution/technology and strategic colour	Description / usage / comments	Avail-able/life-cycle	Availa-ble in future
Maven	Midrange deployment	X Green	X
Endevor	IBM Mainframe deployment	X Green	X
Configuration and change management			
// IBM Rational ClearCase	*Configuration management on Midas platform (version handling tool for source code and project documents)*	*Red Ph. 5*	
// IBM Rational ClearQuest	*Change management – platform independent (tool for change request and defects)*	*Red Ph. 5*	
GIT	Configuration Management on Intel platform (version handling tool for source code and project documents); Open Source *// replaces IBM Rational ClearCase*	X Green	X
Atlassian Stash	Configuration Management on Intel platform (Central Repository for Git) *// replaces IBM Rational ClearCase*	X Green	X
Endevor	Configuration and change management on the IBM Mainframe	X Green	X
Rochade, ASG Software	Metadata repository	X Green	X
Atlassian JIRA	Web-based issue tracking tool suitable for normal and agile projects; Open Source *// replaces IBM Rational ClearQuest*	X Green	X
Bamboo	Continuous integration tool	X Green	X
Project and Resource management			
MS Project	Project planning	X Green	X
RFS – Request For Service	Service Request to Nordic Processor	X Green	X
Clarity	Nordea IT portfolio management system	X Green	X
HRMS	Resource allocation tool	X Green	X
IT Planning and Reporting Tool	Project economy	X Green	X
Environment			
PSDM	Project and System Documentation Management tool	X Green	X
HyperSnap	Screen dump	X Green	X
BeyondCompare	Intel compare	X	X

Name of the IT solution/technology and strategic colour	Description / usage / comments	Avail-able/life-cycle	Availa-ble in future
		Green	
XMLSpy	XML Development environment	X Green	X
Oracle Enterprise Repository	Web Services management repository	X Green	X
Xpediter	IBM Mainframe debugger	X Green	X
Abend Aid	IBM Mainframe dump analyser	X Green	X
File Manager	Data manipulation on IBM Mainframe *// replaces FileAid*	X Green	X
Atlassian FishEye	Reporting and search facility for GIT Repositories.	X Green	X
Atlassian Confluence	Tool for project collaboration, e.g. development projects, for light documentation and wiki / information sharing purposes	X Green	X
IBM Rational Method Composer	Method Composer (workflow tool for HTML page generation and orchestrating related artefacts)	X Green	X

2.9 Security technology

Security technology covers common security solutions to protect Nordea and Nordea customers' assets handled by Nordea. To provide better overview the security technology is divided into the following categories:

Name of the IT solution/technology and strategic colour	Description / usage / comments	Avail-able/life-cycle	Availa-ble in future
Access Control			
IBM Tivoli Access Manager for eBiz, Tivoli Federated Identity Manager, LDAP	*NINAA* Infrastructure for Nordea For Internal Web applications

LDAP master Policy server | X Green | X |
IBM RACF	IBM Mainframe resources	X Green	X
Microsoft Active Directory	Microsoft Windows resources	X Green	X
Axiomatics Policy Server	Context aware policy based fine grained authorizations for NCAPE-ABAC infrastructure	X Green	X
Identity Management			
"IAM"	Common Identity and Access Management	X	X

Name of the IT solution/technology and strategic colour	Description / usage / comments	Avail-able/life-cycle	Availa-ble in future
Sailpoint IIQ CA Role and Compliance Mgr	system is been built. Sailpoint IIQ for Identity management and analysis / data mining tool	Green	
IBM Tivoli Identity Mgt (provisioning)	Provision of authorisation (Access)	X Green	X
IBM Tivoli Access Mgr (for SSO)	Single Sign On System	X Green	X
IBM Tivoli Identity Mgt (for SSO)	Password reset and change, PSS (Password Self Service)	X Green	X
PassTicket	Single Sign on functionality for z/Os	X Green	X
RRSF	RACF Remote Sharing Facility – Command propagating solution	X Green	X
Axiomatics	Policy based access control	X Green	X
Integrity and Confidentiality			
SafeNet LUNA HSM	Network-based hardware security module. Supports partitioning and virtualised servers.	X Green	X
Atalla	Hardware Security Module used on the Tandem/HP Non-stop platform.	X Green	X
IBM HSM	PCI-based crypto adapter. Used within Cards/ATM area.	X Green	X
SafeNet ProtectServer	PCI and Network HSM for special purposes. (Ezio/VerifyServer for Customer Authentication) Special purpose for cards-area, network-based models support virtual servers.	X Green	X
nCipher (ROOT CA)	Offline HSM for PKI CA Root keys	X Green	X
Microsoft AD PKI	PKI based on Microsoft 2008 R2 and AD for internal issued certificate services	X Green	X
PGP	File Encryption	X Green	X
External SSL certificates	Symantec Managed PKI (previous Verisign SSL certificates for *.com,DK,SE,NO etc..)	X Green	X
//Nexus OCSP	*// Internal certificate revocation database for issuing certificates (will be replaced with Swedish Bank ID in the future)*	*X Amber Ph.4*	
In-house solution NSS	Infrastructure components for - federation and file transfer encryption; - time stamping of all transactions in Swedish branch system Teller	X Green	X
In-house solution NSP	Integration solution for Bank ID servicing Corp. & Private NetBank to provide PKI authentication	X Green	X

Name of the IT solution/technology and strategic colour	Description / usage / comments	Avail-able/life-cycle	Availa-ble in future
	(currently SE only) In the future: - to replace NSS - provide digital signature - encryption solution		
Cisco ISE	NAC utilized for wired and wireless connection authentication with the use of PKI infrastructure		X TBD
Malware Protection and Encryption			
Symantec Endpoint Protection	Antivirus on Windows clients and servers	X Green	X
Intrusion Prevention			
Juniper IDP	Handled as a Managed Security Service for Intrusion Detection and Prevention	X Green	X
PaloAlto Application Firewall	Handled as a Managed Security Service for Intrusion Detection and Prevention	X Green	X
CheckPoint Software Blades	Monitoring of alerts handled as a managed security service	X Green	X
Security Log Management			
McAfee SIEM	Log management; parts of the solution will be performed as a Managed Security Service	X Green	X
McAfee Vulnerability Manager (MVM)		X Green	X
Secunia vulnerability advisory service	Vulnerability advisories	X Green	X
Security testing			
HP Webinspect	Used for testing during development projects	X Green	X
Network and Firewall security			
Checkpoint	Firewalls and other network security related solutions built on the firewall platform	X Green	X
Algosec AFA	Firewall Analyser (for rule sets)	X Green	X
Algosec Fireflow	Firewall change management tool connected to the AFA		X Green
Citrix NetScaler	Web Application Loadbalancer Firewall	X Green	X
LanCope Stealthwatch	Stealthwatch Netflow based network security monitoring tool	X Green	X
Checkpoint DDoS	Solution against DoS attacks in the Network and	X	X

Name of the IT solution/technology and strategic colour	Description / usage / comments	Avail-able/life-cycle	Availa-ble in future
Protector	Firewall security area in own data centres	Green	
Vendor Remote Access			
Citrix	Remote access solution	X Green	X
Checkpoint VPN	Site to site VPN	X Green	X
Vasco Digipass	Authentication solution	X Green	X
Employee Remote Access			
Citrix	Remote access solution	X Green	X
Juniper SA	*Remote access connectivity // to be replaced with Citrix RA solution*	*X Amber*	*TBC*
Safenet	Authentication solution	X Green	X
Employee Internet and email gateway access			
Bluecoat SG	Internet access proxy for employees	X Green	X
Bluecoat AV, Bluecoat CAS, Bluecoat MA (advanced malware detection), Kaspersky	Anti-virus connected to the Internet access proxy	X Green	X
Symantec.Cloud	Secure email and email gateway including spam control and anti-virus	X Green	X
Deltagon	Secure email solution for external emails *Note: Nordea wide support arranged 2015Q4*	X Green	X
Web Service and other security gateways			
IBM DataPower	Web services gateway, used as a gateway to handle security for external traffic	X Green	X
Oracle Service Bus	Internal SOA integration backbone and services layer, used to authenticate and authorise internal WS consumers and audit WS requests.	X Green	X

2.10 Network

This chapter covers network features and solutions to ensure connectivity.

Name of the IT solution/technology and strategic colour	Description / usage / comments	Avail-able/life-cycle	Availa-ble in future

Name of the IT solution/technology and strategic colour	Description / usage / comments	Available/life-cycle	Available in future
Wide Area Network (WAN)			
MPLS / VRF	International WAN connections for network virtualization and increasing availability and security	X Green	X
CWDM /DWDM	Fiber technologies for DCs interconnection with high throughput and HA	X Green	X
Local Area Network (LAN)			
IEEE 802.3 / Ethernet	Fixed cabling based on TCP/IP protocol	X Green	X
IEEE 802.11 b/g/n	Wireless LAN access	X Green	X
IEEE 802.11 ac	MIMO Wireless LAN access		X
Cisco AnyConnect	Tool for authenticating workstation for wired or wireless Nordea internal network	X TBD	TBD
FC / FCoE	Data storage fibre connection	X Green	X
IPv4/IPv6	Use dual IP stack for optimal IP address management, control, utilization. And smooth migration to secure network segmentation		X
SDN	Software Defined Network, OpenFlow based conception for divide Data plane and Control plane to control network from Application level more efficient		X
NFV	Network Function Virtualization, porting network functions to virtual environments in order to enable the migration from proprietary appliance based embodiments to a standard hardware and cloud based infrastructure.		X
Public Internet connection			
	Wired and wireless	X Green	X
IPv6	Increase network visibility for external customers, who operate with only new pure IPv6 connections	X Green	X
ISP DDoS protection CheckPoint DoS box / run by Secode	Using ISP Secure Center equipment to protect Internet connection from DDoS threats (CheckPoint is only Open Pages)	X Green	X
CDN / Scrubbing Centers	Cloud based DDoS protection and Internet attacks mitigation		X TBD

2.11 Operations Support

This chapter covers most important operation support systems for application and customer. Supplier specific resource layer management technologies are not included, such as network element managers.

Name of the IT solution/technology and strategic colour	Description / usage / comments	Avail-able/life-cycle	Availa-ble in future
Application management			
Remedy ARS	Trouble Ticketing workflow and configuration management system	X Green	X
IBM ISM Maximo	// Trouble Ticketing workflow and configuration management system in CCC // replaced with Remedy ARS in 2014	Red	
AppDynamics	Application performance management system for monitoring, analyzing and reporting transactions in VDC	X Green	X
CA APM (Wily)	// Application performance management system replaced by AppDynamics	Red	
IBM Tivoli ITCAM	Monitoring system suite for applications	X Green	TBD
URL Monitor	URL monitoring tool for application //Tool is under re-evaluation for VDC //	X Green	TBD
Microsoft Service Center Configur. Manager (SCCM)	Configuration management system for Wintel platforms	X Green	X
Automic UC4 (former UC4 Software)	Job Scheduling and workflow tool for scheduling, automating and monitoring computer batch jobs	X Green	X

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